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[Original Communication.]

## SYRUP OF PROTOCHLORIDE OF IRON (FERROUS CHLORIDE).

BY JOSEPH F. SOMMERHOFF, PH.G.*

Among the many iron preparations which have from time to time been handed to the medical profession and have attracted considerable attention, is that of the syrup of protochloride of iron.

Although not officinal, it is prescribed by the physicians of certain localities in preference to the officinal preparations of iron.

This syrup is best prepared by two methods: *first*, by dissolving iron wire in diluted hydrochloric acid ($Fe+2HCl=FeCl_2+H_2$) and adding the solution thus obtained to thick simple syrup; and *secondly*, mixing together solution of perchloride of iron in certain proportions with glycerin and syrup and exposing this to the rays of the sun until colorless, when the sugar of the syrup will have changed the ferric to the ferrous chloride.

When to be made according to the first process proceed as follows: Take of iron (wire), 280 grains; hydrochloric acid (C. P.), 552 grains; water, 4 fluid ounces. Heat them together in a flask of the capacity of 12 fluid ounces and for about six hours at a temperature of 212° F. When the iron is all dissolved, filter the liquid and add to it enough simple syrup to measure 40 fluid ounces. The simple syrup is prepared by dissolving 3½ pounds of sugar in 28 fluid ounces of water.

For the second method, take of

| | |
|---|---|
| Solution of Chloride of Iron (Ferric Chloride) | 320 minims. |
| Glycerin | 4 fl. oz. |
| Syrup, enough to make | 16 fl. oz. |

Mix and expose to the sun until entirely colorless.

Three or four days will be sufficient in summer, six to eight in the very coldest weather in winter; the coldest weather not being an impediment for the reduction, which can be promoted by heating the syrup near the stove before exposing it to the sun.

The syrup of ferrous chloride has also been made in a different manner. The following formulæ are taken from Hager's Manual and Praxis.

*Syrupus Ferri Chlorati.*

| | |
|---|---|
| 1. Chloride of Iron (ferrous, prepared by exposure to the sun. | 1 part. |
| Hydrochloric acid... | 5 parts. |
| Syrup..... | 100 " |
| Dissolve. Prepare when required. | |
| 2. Chloride of Iron (Ferrous)..... | 30 parts. |
| Hydrochloric Acid... | 3 " |
| Syrup..... | 480 " |
| Dissolve. | |
| 3. Solution of Chloride of Iron (Fer.) sp. gr. 1.250–1.255..... | 4 parts. |
| Syrup..... | 20 " |
| Mix. | |

When made by the first method, this syrup has a light-green color, slightly ferruginous taste and acid reaction. In iron strength each fluidrachm will contain as near as possible two grains of anhydrous ferrous chloride.

When made by the second method, it is almost colorless. In iron strength one fluidrachm is equal to 10 minims of the tincture of chloride of iron.

The syrup prepared from hydrochloric acid and iron preserves its greenish color for months, if not exposed directly to the rays of the sun. It is also well to keep the bottles well filled and tightly corked.

That made from liquor ferri chloridi keeps very well for a short time after exposure, but in diffused daylight, or even after a month's time, it will acquire a brownishh color without sensibly changing its qualities. I have also noticed a black precipitate after exposure to daylight for four months.

The chemical relations to other substances are such as are common to ferrous salts in general.

The advantages of this preparation are its miscibility, without forming a precipitate, with elixir of calisaya bark, tincture of gentian, the elixir and syrup of the hypophosphites, solution of bromides, etc.; its taste is not objectionable, it being certainly more palatable than either the tincture of the acetate or chloride, or the solution of the citrate or tartrate Neither does it possess the diagreeable property of blackening and corroding the teeth, which many other iron salts possess.

Its medical properties are those of the iron preparations. The dose is one fluidrachm.

* From a Thesis presented to the College of Pharmacy of the City of New York, 1884.

[Original Communication.]

## THE MANUFACTURE OF SALT AND BROMINE AT POMEROY, OHIO.*

BY CHAS. C. SEEBOHM, PH.G.

Salt exists in extensive beds, and even entire mountains, from which it is obtained in blocks or masses, by mining operations. Its geological position is very constant, occurring almost invariably in secondary formations, associated with clay and gypsum. In solution it exists in certain springs and lakes, and in the waters of the ocean. With the exception of a remarkable bed of rock salt in the island of Petite Anse, in Vermillion Bay, on the coast of Louisiana, there are in the United States no salt mines east of the Rocky mountains; but there are numerous salt springs which either flow naturally or are produced artificially by sinking wells to various depths in places where salt is known to exist.

It is on this last method of obtaining it that I intend to write. The place from which I derive my authority (my home, Pomeroy, Ohio) is a small city of the second class, situated on the banks of the Ohio river, about half way between Pittsburgh and Cincinnati. There is no doubt that the name of this city is familiar, for in later years it has become renowned as an extensive producer of salt, and the very important substance or element, bromine. Therefore, as these substances are the theme of my subject, I will aim to describe in the plainest possible way the manner in which they are produced.

The name of the furnace I have selected is the "Pomeroy Salt Furnace," managed by Mr. Edward Turnbull, to whom I am obliged for his endeavors to further the interest and value of my paper, by statistics and the liberty of his works. The furnace is situated at the lower end of the city, near what is called the Peacock Coal Mine, which places the necessary substance, coal, convenient for use.

The first step in the manufacture of chloride of sodium is to obtain the salt water, and this is furnished to the above-named furnace by three salt wells, which may be described as follows:

The *first, No. 1*, called the Pioneer, is 1,010 feet deep, and its pump is inserted to the depth of 600 feet. The wrought iron casing through which it passes on the inside is 3¼ inches in diameter, and on the outside 4 inches. The diameter of this well below the pump at 600 feet is 2½ inches.

*Well No. 2* is 1,024 feet deep, depth of pumps 575 feet, iron casing same size as No. 1. Diameter of the hole below the pump is 3 inches.

*Well No. 3* is 1,050 feet deep, depth of pump 630 feet, inside diameter of pump 4½ inches, outside 5 inches. Size of hole below the pump is 3½ inches.

After the water is obtained from the earth, it is forced by means of another pump into a large wooden reservoir, but before passing into this reservoir, it passes through six long wooden troughs, containing fine sand and gravel. These troughs purify the water to some extent; that is, they retain as oxides a small quantity of iron which exists in the natural salt water.

The three wells pump on an average, when in good working order, 25 gallons of water per minute, or sufficient water, after it has all been purified and evaporated, to make 200 barrels of salt per day.

The impurities in the natural water consist of small amounts of chlorides of magnesium and calcium, and a few other natural impurities But the most noticeable is iron.

From the large wooden reservoir above-mentioned, the salt water is passed into what is called the heater. This heater is a small wooden reservoir, iron bound, through which large copper pipes pass. And in these the water is heated preparatory to entering the large furnace.

After it is evaporated in this heater for some time, it is run through hollow log troughs, into what is known as the large furnace.

This large furnace consists of three vats, or large wooden boxes, each being iron bound, the bottom of each being made up of ten iron pans. These vats are connected together by means of hollow logs, and under the iron bottoms or pans a direct and hot fire is maintained night and day, 1,000 bushels of coal being here consumed during twenty-four hours. In this large furnace the water is boiled until it attains from 12° to 13° by the salt hydrometer, at the temperature of 220 Fah.

After attaining this point, the water is run into shallow wooden reservoirs which are called the settlers. These are six in number, sometimes more, and are heated by steam circulating through copper pipes. The water slowly passes from one to another of these settlers, until it arrives at the sixth.

At this point the water is called brine, and it is now held at the temperature of from 220° F., to an average of 150° or 160°.

Old butter, grease, and such fatty matters, are now put into these settlers in order to settle the mud, as it is called.

From the sixth settler the brine passes into "the purifiers," which are usually two in number, and are large, deep wooden reservoirs, built on the same principle as the heater.

Before entering these purifiers, however, the brine is passed through a short wooden trough filled with lime. After remaining in the purifiers for

* A thesis presented to the Cincinnati College of Pharmacy, 1884.

twenty-four hours, during which evaporation is continued, it is passed into a large, shallow, wooden reservoir, known as the receiver. Here the brine must comply to the following conditions: It must denote 22° by the salt hydrometer, at a temperature of 160° Fah.

The brine is now at the point of saturation, and ready for making salt, and at this point it is held at 160° F., 88° by the salometer.

The water has, up to this point, been reduced fully two-thirds by the boiling and evaporation. Therefore it requires one hundred gallons of the water direct from the wells (which contains thirty per cent of salt) to make thirty gallons of brine of the above-named strength. And thirty gallons of this brine will make one bushel (50 pounds) "of a No. 1 dry salt."

From the receiver the concentrated brine is passed into the grainers. These grainers are large, shallow, wooden tubes, extending over a large territory, so to give them surface, through which are arranged large copper pipes heated by steam.

Here the salt crystallizes, the different grades being obtained at will. The following temperatures are used in evaporating, in order to obtain these different grades: *Coarse salt* requires 150° F.; *moderately* coarse salt from 160° to 175° F.; *fine* from 180° to 184° F.; and very *fine*, a still higher temperature.

After the salt crystallizes, it is scooped out of the grainers by the workmen, and laid in large drainers, and allowed to drain and dry, twenty-four hours sufficing for this operation, and then it is carted or wheeled into the salt house. The salt house is a substantial wooden structure divided into compartments, and each grade of salt has its department, into which it is bulked for market.

The analysis proves this salt to be ninety-seven per cent of chloride of sodium, two and one-half per cent of moisture, and one-half per cent of foreign matter or other impurities.

At the present day salt is shipped in barrels and sacks.

As the amount of salt produced in my region, and the price paid for it at the present in comparison with the past, may be of interest, I have compiled the following statistics:

About thirty years ago, there were six salt works in operation, and together they yielded not to exceed 750 barrels of 280 pounds each, or 5⅔ bushels of net salt per day. In the past year there were fourteen salt works in operation, and they together yielded, on an average, 3,100 barrels per day. Therefore, in a year of three hundred days, which is a fair average of running time, the yield will be 930,000 barrels.

Some ten years ago there were twenty-six salt works in operation, thirteen on each side of the Ohio River, but some have fallen into disuse and are closed up.

About thirty years ago the price of salt wholesale was from $1.10 to $1.15 per barrel, but during the past year it sold for less than the cost of production, from 65c. to 75c. per barrel.

(To be continued.)

### Substitute for Roche's Embrocation.

DR. BLENKARNE says the following serves as well as the original to relieve whooping cough: Ol. succini, ʒiv.; Ol. camphoræ, ad ℥iss. M. To be rubbed on the back and front of the chest three or four times daily.

The same writer in the same connection speaks of an "old woman's remedy," viz.: a grain each of alum and powdered sugar, to be taken dry, every four hours, and an occasional dose of magnesia or senna.—*Brit. Med. Journ.*

[ORIGINAL COMMUNICATION.]

## VASELINE.

BY E. FOUGERA, JR., PH.G.*

SOME eight years ago, Mr. E. Fougera, of New York, and Mr. Charles Lancelet, a French pharmacist, of Paris, experimented on a then new and quite interesting product which since received the fanciful name vaseline. Having participated in these researches, I will briefly describe some of its physical and chemical properties and likewise its mode of manufacture.

Crude petroleum oil, subjected to distillation, furnishes a series of hydrocarbons increasing in specific gravity until the end of said operation has been reached. Among the by-products, benzin is the lightest and paraffin the heaviest.

When all the lighter bodies have distilled over, the operation is discontinued, and as a residue there is found in the still a tar in odor and taste similar to that of petroleum, semi-fluid in consistence, but becoming gelatinous when cold.

In 1874, after many trials and dangerous experiments, owing to the gaseous distillates, Robert Chesebrough, of New York, succeeded in deodorizing and discoloring this tar residue, and gave it the name of "vaseline."

Vaseline is an undefined hydrocarbon composed of volatile, liquid, and solid hydrocarbons, which constitute a peculiar mineral jelly.

In appearance, vaseline is greasy, extremely unctuous, and, when pure, it is colorless, odorless, and insipid, its consistence being that of jelly. Its melting-point is 35° C., boils at 150° C., and distils at 200° C., yielding an amber-colored oil having the characteristic odor of petroleum. Vaseline is bland, resolvent, and unalterable in the light and air, but if exposed to direct sunrays, its petroleum odor at once is nascent and noticeable. In color, it is either "white," "blond," or "red," according to its degree of purity. It is neutral, inoxidizable, uncrystallizable, and insaponifiable; alkalies, metallic oxides, and acids show no reaction. Sulphuric and nitric acids decompose it only when raised to a high temperature. It is insoluble in water and glycerin, slightly so in alcohol, even when hot, totally soluble in hot ether, but only partly so in cold. It is soluble in all fatty bodies, wax, paraffin, essential and mineral oils, chloroform and disulphide of carbon. Cold, it dissolves bromine, iodine, iodide of sulphur, and sulphur at 150°. Heated in a flask with bromine, iodine, or iodoform and iron-filings, tasteless ferric salts are obtained which are unalterable. Phosphorus, when slightly heated in a flask containing vaseline, dissolves in but small quantities; if heated in a capsule containing vaseline, it burns while melting. Carbolic acid is soluble only to a small extent. But it readily dissolves cantharidin, coniine, atropine, nicotine, cubebine, and many other alkaloids. It enjoys the power of extracting the most intense, and retaining the most delicate odorous principles imparted to it. Gum benzoin, balsams of Tolu and Peru, vanilla, and Tonka beans, etc., . . . readily yield up to it their respective odors and active principles; likewise do chamomile flowers, juniper berries, laurel leaves, and the aromatic and narcotic plants when subjected to a heat of 40°.

In commerce, three kinds of vaseline are met with, different in color, but similar in properties. White vaseline is generally used internally, for cold cream, certain prescriptions, ophthalmic pomades, etc. The blond vaseline is used in pharmaceutical pomades and ointments, skin diseases, and as a hair-dressing. The red vaseline is mostly used for veterinary purposes, and with excellent results; it is also used in making colored ointments and a number of various preparations for the preservation of leather, wood, etc.

The manufacture of vaseline is quite simple. When the lighter liquids, gases, etc., of the petroleum oil have been distilled over, the remaining product, the tar, is placed in a large open iron boiler, which is suspended over a hot fire in the open air until deodorized; then it is allowed to cool. In a hot-air chamber (about 50°), arranged in rows, are large inverted tin cones filled with bone-black; upon these the deodorized tar is poured. At the end of a few hours, the tar comes through in a state of "white vaseline;" after a while, the bone-black becomes partially exhausted, the product is no more "white," but "blond," and as the operation progresses, the bone-black becoming weaker in its absorbing powers, the "blond" passes into a "red." Thus we have white, blond, and red vaselines. This mode of manufacture constitutes the American process. The French process was as follows: Owing to the considerable amounts of deodorized tar absorbed by the bone-black during the processes of filtration and discoloring, the French tried to be more economical. The deodorized tar was thoroughly mixed with four parts of pulverized bone-black, and, after twenty-four hours in the hot-air chamber (50°) the mixture was placed in percolators and washed with boiling ether, which dissolved the vaseline and carried it through into a recipient. The ether was recovered by distillation, and the vaseline was found, at the end of the operation, in the still.

The process worked very well on a small scale, but when it became necessary to work upon very large quantities, the *modus operandi* was found defective and not practicable, it being too costly and not expeditious enough. So they experimented with hot steam, trying to drive or force the vaseline out of the bone-black; but that was useless. Several other experiments were attempted, but to no purpose.

Several chemists, to discolor the deodorized tar, used sulphuric acid, or a mixture of sulphuric and nitric acids. It is much to be regretted, however, that such means should ever have been resorted to, because not only is it extremely difficult to wash out completely the excess of acid and water used in washing, which remains as in combination, but also because the vaseline acquires an acrid taste, becomes like pitch in consistence, and, above all, loses the greater part of its admirable and remarkable physical properties which rendered it so universally sought for.

When first manufactured, it originated and was sold only in New York, but soon the demand became so great that not only was it necessary to increase the ground and apparatus, but it was found necessary to manufacture the product in various parts of the world, in order to accommodate the consumers.

France, England, Germany, Italy, and many other countries have factories of vaseline established, manufacturing and selling the product.

* Extract from a thesis presented to the College of Pharmacy of the city of New York, 1884.

### Poisonous Vanilla.

JAILLET reports that there is some vanilla in the market which has grown upon Réunion along the trunks of Jatropha Curcas, and has become contaminated by the poisonous milky juice of this euphorbiaceous tree. The author ascribes to this fact the noxious effects which have lately been observed to follow the eating of vanilla ices in some localities.—*Randschau*, 1884, No. 35.

### On Medicated Waters and Simple Elixir.

MR. JOSEPH W. ENGLAND lately read a paper at the Pharmaceutical Meeting of the Philadelphia College of Pharmacy (published in *Am. Journ. Pharm.*, February, 1884), in which he discussed the relative merits of the processes of the U. S. Ph. of 1870 and 1880. He finds that, while the process of 1870 was faulty on account of directing carbonate of magnesium to be used, the U. S. Ph. of 1880 was equally at fault in directing a manipulation (incorporating the oil into cotton), which often resulted in loss, and was not easy to manage.

In general, we may say that we agree with the author's criticisms. It is true that some oil may be lost by adhering to the fingers or the vessel in which the mixing is performed. The rate of packing the cotton in the percolator is likewise liable to give trouble occasionally. Nevertheless, in the case of such oils as oil of cinnamon, oil of anise, etc., which are not injured by a short, though intimate exposure to air, the resulting product is perfectly satisfactory. The loss of oil, in *these* cases, is of little account, since there is a large excess directed to be used, and the water percolated through the cotton will, even under the most favorable circumstances, fail to extract all the oil absorbed by it.

There are, however, certain cases in which the cotton process becomes quite objectionable. One of the most striking is the process directed by the U. S. Ph. for making *Elixir Aurantii*.

We are there directed to add the *oil of orange* to the cotton, in small portions at a time, distributing it thoroughly by picking the cotton apart after each addition; then to pack it tightly in a percolator, and gradually to pour on a mixture of one part of alcohol and three parts of water, until two hundred parts of filtered liquid are obtained, in which one hundred parts of sugar are to be dissolved.

Now, oil of orange is one of the most delicate and perishable essential oils. If permitted to stand for any length of time in a bottle containing a comparatively large quantity of air (though tightly sealed), or if kept in a full bottle not hermetically sealed, so that air can still osmose through the pores of the cork and renew the small layer of air on top of the oil, there will be a gradual change observed, betraying itself by the occurrence of a more or less pronounced terebinthinate odor and taste, which finally becomes so disagreeable as to make the oil unfit for further use. This approach, in physical properties, to oil of turpentine is probably due to oxidation, partial resinification, as well as to polymerization of the hydrocarbon of which the oil is composed.

To rapidly produce this deterioration, there is no better way than to distribute oil of orange over a large surface, and expose it to the air. Supposing we take perfectly fresh and sweet oil of orange (oil of lemon acts in the same manner), and impregnate cotton with it, an alcoholic extract of the latter will at once show the greatest difference in odor and taste from an alcoholic solution of the oil itself. And a hydro-alcoholic solution will betray the same difference, consisting in the former case of a most decided turpentine taste and odor.

To make a fine-flavored simple elixir, therefore, the officinal process is not the best that can be devised. We have tried both on the small and on the large scale. On the small scale, the risk is not so great, because it takes only a comparatively short time to incorporate a few drachms of oil of orange into cotton, and the consequent deterioration is not great. But *on a large scale*, the process is entirely impracticable. When as much as eight or ten fluid ounces of the oil are to be incorporated into cotton, it takes a very considerable time to do this properly. Though it may be done in instalments, and each small portion may be packed in the percolator as soon as impregnated, nevertheless, the time before liquid can be poured in the percolator is so long that the oil will *invariably* deteriorate, according to our experience.

While on this subject, we would add that the most economical and effective plan is to dissolve the oil of orange—while in its *fresh* condition—*immediately after being received* from the dealer, in deodorized alcohol, and to use a proper proportion of this solution when required. Those who try this plan once will probably never wish to experiment with another.

To return now to Mr. England's paper on Medicated Waters. While he acknowledges that *distilled* waters are generally superior to those made by means of the essential oil, he recognizes the practical difficulties in the way of making them by distillation, and adheres to the trituration process.

In looking around for a substance free from the objections raised against carbonate of magnesium, he finally hits upon precipitated phosphate of calcium—which substance had, however, already been proposed for the same purpose by one of us in the *Report on the Revision of the U. S. Ph.*, 1880, p. 15.

This substance is undoubtedly the best agent for effecting a thorough trituration and division of the oil.

The author, however, proposes another feature, which we consider of decided advantage, namely, he proposes to add to the oil, first, a definite quantity of alcohol, most or all of which will be dissipated if the directions of the author are followed, namely, that the alcoholic solution of the oil should be rubbed with the precipitated carbonate of calcium until the latter is a dry powder.

We presume the object of the author in directing the alcohol was to dilute the oil so as to bring about a more intimate mixture with the calcium salt. A still greater advantage, however, consists, in our opinion, in the protection which the presence of alcohol exerts over the oil while exposed to the air. And for this reason we think that the alcoholic solution of the oil should *not* be triturated with the phosphate of calcium until *all* the alcohol has evaporated and the calcium salt has become dry, but that the water should be added while the magma in the mortar is still moist. Surely nobody will raise any objection to the presence of perhaps 1 fluidrachm, or at most 1½ fluidrachms of alcohol in a quart of aromatic water.

The formulæ proposed by the author are the following ("Water" standing for "Distilled Water"):

*Aqua Anethi Br.*

| | Parts. |
|---|---|
| Oil Dill..... ½ f ʒ | 2 |
| Alcohol.....1½ f ʒ | 6 |
| Prec. Phos. Cal...2 ʒ | 8 |
| Water to make..2 O | 1,000 |

In the same manner are to be prepared:

*Aqua Anisi.*
*Aqua Cinnamomi* (Ceylon).
*Aqua Fœniculi.*
*Aqua Menthæ Piperitæ.*
*Aqua Menthæ Viridis.*
*Aqua Pimentæ, Br.*

Modified formulæ are given for the following:

*Aqua Aurantii Florum.*

| | Parts. |
|---|---|
| Oil Neroli (Big.).12 ♏ | 2 |
| Alcohol..... 1½f ʒ | 15 |
| Prec. Phos. Calc. 2 ʒ | 20 |
| Water to make.. 2 O | 2,500 |

*Aqua Amygdalæ Amaræ.*

| | Parts. |
|---|---|
| Oil Bit. Almonds.15♏ | 1 |
| Distilled Water.. 2 O | 15 |

*Aqua Camphoræ.*

| | Parts. |
|---|---|
| Camphor.....2 ʒ | 8 |
| Alcohol.....1½ f ʒ | 6 |
| Prec. Phos. Calc..4 ʒ | 15 |
| Water to make..2 O | 1,000 |

*Aqua Rosæ.*

| | Parts. |
|---|---|
| Oil Rose.....6 ♏ | 2 |
| Alcohol.....1 f ʒ | 30 |
| Prec. Phos. Calc...2 ʒ | 40 |
| Water to make....2 O | 5,000 |

### Disguising the Taste of Tincture of Iron.

DR. HAGER recommends that tincture of the sesqui-chloride of iron be mixed with simple syrup, and then with milk. This mixture will not affect the teeth, nor will the styptic taste be apparent.

### The Purgative and the Vesicating Principle of Croton Oil.

MR. HAROLD SENIER announced some years ago that the purgative property of croton oil resided in that portion which was soluble in alcohol. This statement was based on what the author believed to be careful experiments, and in consequence thereof it was naturally supposed that croton oil might easily be freed from the non-purgative portion by dissolving it in a definite quantity of alcohol, and evaporating the alcoholic solution. Another point was also established at that time, namely, that the solubility of croton oil in alcohol increased by age. This circumstance led to the natural conclusion that the therapeutic activity of the oil must increase in direct ratio with its increased solubility in alcohol, hence the wording of the description in the U. S. Ph. of 1880.

It appears, however, that Mr. Senier was in error at that time. He has continued his experiments and finds now that the very reverse is the case from what he formerly announced, namely, that the *purgative* property of the oil resides in the portion *insoluble* in alcohol. On the other hand, the portion *soluble* in alcohol contains the *vesicating* principle.

Dr. J. W. Meek, of London, at the request of Mr. Senier, experimented with the non-vesicating (alcohol-insoluble) portion of the oil and found that in doses representing the non-vesicating portion of $\frac{1}{16}$ minim of ordinary croton oil, it produced no appreciable effect beyond slight nausea and some sense of discomfort. But in doses containing the non-vesicating principle of ¼ minim of croton oil, it acted as a powerful purgative in from from three to six hours after administration.

Regarding the *solubility* of croton oil in *alcohol*, Mr. Senier says:

"When alcohol (sp. gr. 0.794 to 0.800) is mixed in equal volumes with English croton oil, perfect solution takes place, the mixture being permanent at all ordinary temperatures; and and this is equally true, when any less quantity of alcohol is taken. When, however, the proportion of alcohol to croton oil becomes as seven volumes to six, or any larger proportion of alcohol, then a part of the croton oil separates. This part varies in quantity, in the case of different samples of oil. It is an interesting fact that that portion of the croton oil which separates when the alcohol is in excess, is afterwards insoluble in any proportion of alcohol. But that portion of the oil dissolved by alcohol is, when separated, soluble in all proportions.

The vesicating principle Mr. Senier found to reside in the *combined* fatty acids. It may possibly be a fatty acid heretofore unstudied, and to clear up to this point, Mr. Senier will continue the investigation.—*Pharm. Journ.*, Dec., 1883.

## UREA-ASSAY.*

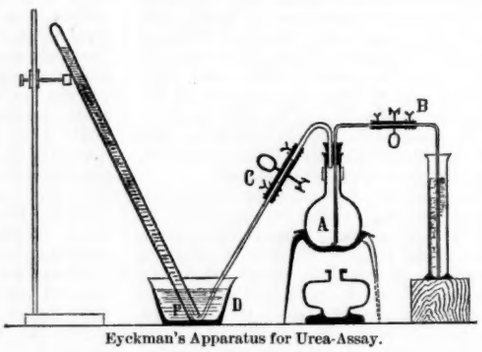
PROF. J. F. EYKMAN some time ago proposed a new method of estimating nitrous ether by means of a specially-arranged apparatus, which was fully described and illustrated in NEW REMEDIES (1882, 140). This method is now recognized to be the most reliable so far known for the purpose. The same author now proposes to use a similar apparatus for the more exact determination of *urea*.

The methods now in use for determining urea are either based upon titration (Liebig's process, by nitrate of mercury), or upon the volume of nitrogen liberated by an alkaline solution containing bromine [that is, an alkaline hypobromite].

The most recent modification of the latter method is that proposed by Hamburger.† While this method yields very good results, at least in so far as repeated assays of one and the same urine differ by not more than 1%, yet it appears to be faulty, since it would seem (from a consideration of his volumetric solutions) that about 16.5% of nitrogen *fails* to be set free and therefore escapes estimation.

It occurred to the author that a modification of his apparatus for estimating nitrous ether would serve for making more exact assays than are possible by other methods.

The modified apparatus is illustrated in the accompanying cut.



Eyckman's Apparatus for Urea-Assay.

*A* is a flask holding about 200 cubic centimeters which is closed by a doubly perforated rubber stopper, strongly secured by copper wire. The glass tube, *B*, has a calibre of only about 2 millimeters, and reaches nearly to the bottom of the flask, where its end is turned over at a right angle. The connections at *C* and *B* are made with stout pieces of rubber tubing fastened tightly with copper wire. The basin, *D*, is filled with mercury. The flask stands upon wire gauze placed on a tripod. The measuring tube or tubes are about 40 to 50 centimeters long, and are graduated to 50 cubic centimeters.

To prepare the apparatus for a series of assays, proceed as follows:

Warm the flask *A*, while the pinch-cock at *B* is open, until a sufficient amount of air is expelled; then let cool and allow water to ascend in *B*. Close *B*, open the pinch-cock at *C*, and boil until all the air is expelled. Then place the orifice (P) of the gas-measuring tube (see further on) over the end of *C;* open *B* and close *C*. Now warm the flask until the liquid has been pushed back in *B*. Then remove the heat, and when no more vapor is produced and the liquid in *B* has again ascended to near the pinch-cock *B*, close the latter. It is now ready for use, and may be employed for a series of operations.

If urea is to be estimated, allow 50 cubic centimeters of alkaline bromine solution ‡ to ascend in the tube *B*, taking care that no air enter the apparatus. Next the solution containing the nitrogen to be estimated (say 10 *cc.* of a solution of urea containing about ½ per cent; or one containing ½ per cent of ammonia, etc.) is allowed to enter in the same manner, and, finally, about 10 *cc.* of water, which serves to rinse the tube and brings the rinsings into the flask. Now close *B*, and warm the flask cautiously until the rubber tube above the clamp *C* begins to bulge out slightly. Then open *C* and receive the escaping gas in the measuring tube. Heat a little longer until no more nitrogen gas is given off, or until about 5 *cc.* of aqueous distillate has passed over into the tube. Then open *B*, close *C*, and allow the liquid to return through the tube (in the flask) into a beaker glass. Remove the lamp, and when the somewhat strong evolution of vapor has ceased and the liquid begins to reascend in *B*, close the stop-cock at *B* and proceed to make the next analysis.

Each operation consumes about ten minutes.

It will be seen, therefore, that once the apparatus is properly adjusted, it is ready for use at a moment's notice.

The measuring tube is prepared in the following manner: Its interior is first moistened, then about five *cc.* of mercury introduced, next about 0.2 or 0.3 *gm.* of pyrogallic acid, and, finally, it is filled up with solution of soda. It is now closed with the finger, and inverted over the orifice *p* in the basin *D*. The upward curve of *p* should reach a distance of about two centimeters up into the tube. When the analysis is finished, the tube is well closed with the finger, taken out of *D*, and shaken well for some time, to cause the absorption of the oxygen by the pyrogallic acid. The tube is then placed, in a slanting position, in a vessel containing water, so that the mercury and the soda solution may be replaced by almost colorless water. It is then again taken out, while closed with the finger, turned up and down a few times, in order to wash down the soda solution still adhering to the upper walls of the tube, and finally immersed in a high cylinder containing a thermometer, and filled with water of about the same temperature as the reagents employed. When the gas has assumed the same temperature as the water, the tube is lifted up until the level of the water inside and outside is alike, and the volume read off. At the same time, the temperature and barometric pressure of the air are noted.

Since the alkaline bromine solution as well as the soda solution contain a little air (and, therefore, nitrogen) in solution, the author determined the mean quantity contained in the volumes of these reagents directed to be used. He found this to amount to 0.5 *cc.* (nearly). Therefore, this value must be deducted from the amount of nitrogen finally left in the tube.

The percentage of nitrogen in the analyzed solution is then found from the following formula:

$$0.00125658\frac{273\ (H-e)}{(273+t)\ 760}\times\frac{V-0.5}{v}\times 100$$

[or, abbreviated:

$$\frac{0.045138\ (H-e)}{273+t}\times\frac{V-0.5}{v}]$$

in which the letters denote:

V = volume of nitrogen in tube in *cc.*
v = number of *cc.* of solution assayed.
t = temperature of the gas.
H = corrected barometric pressure in millimetres.
e = tension of aqueous vapor, in millimeters mercury.

A more simple calculation is made with the help of the usual tables giving the weight of one *cc.* of nitrogen at different temperatures and pressures by means of the formula:

$$\frac{a}{10}\times\frac{V-0.5}{v}$$

where *a* denotes the weight of one *cc.* of nitrogen in milligrammes.

If urine be taken for examination, this should be diluted, if the amount of urea is about normal, to five times its original volume. The amount of nitrogen then obtained in the measuring tube, from 10 *cc.* of this diluted urine, will amount to between about fifteen and thirty *cc.* If less or more be found, either a larger or smaller quantity of the diluted urine must be assayed, or another rate of dilution used.

The result is between four and five per cent short of the true amount of urea in the urine; hence a correction is necessary. The following *general* formula will furnish the true amount of urea in one liter of the undiluted urine:

$$\frac{V-0.5}{v}\times 2243\ ab$$

were:

V = volume of nitrogen obtained in *cc.*
v = volume of diluted urine assayed.
a = weight of one *cc.* of nitrogen at the observed temperature and pressure (according to usual tables).
b = rate of dilution of urine.

If b = 5, the formula becomes:

$$\frac{V-0.5}{v}\times 11215\ a$$

The alkaline bromine solution used by the author liberates nitrogen (mostly in part only) also from other nitrogenized compounds, among others, from uric acid, creatin, etc. Hence, if urea in *urine* is determined by the above formula, it will be, after all, somewhat higher than in reality. For perfect accuracy, the other bodies would have to be determined separately. But for practical purposes, this is not necessary.

[For the busy practitioner, the above method is not suitable; but it will be found convenient for physiological laboratories, or wherever the requisite apparatus and skill of manipulating it are available.—ED. A. D.]

* Abstract of a pamphlet entitled Zur Harnstoffbestimmung. Von J. F. Eykman, Tokio, Japan, 1884. Communicated by the author.

† Rec. de Trav. chim. des Pays-Bas, ii., No. 5.

‡ According to Prof. Eykman, the result is but little influenced by the composition of the "bromine-lye." He appears to prefer a mixture containing 5 *cc.* (or 15 gm.) of bromine and 150 gm. of caustic soda per liter.

## Chlorine Fumigations.*

CHLORINE fumigations are performed in many different ways:

The Brit. Pharm. only mixes chloride of lime with water.

The German Pharm. (first edition), Swiss and Russian, have two kinds: a *milder* (fumigatio mitior), which is made by adding vinegar to a mixture of chloride of lime and water, the Russian specifying 240 parts of vinegar for every forty-five of chloride of lime.

The *stronger* fumigation of the three just mentioned pharmacopœias is effected, like that of the Danish and Norwegian, by taking dioxide of manganese, chloride of sodium and sulphuric acid in the following proportions.

| | PHARMAC. | | |
|---|---|---|---|
| | GERM. I RUSS. HELVET. | DAN. | NORW'G. |
| Chloride of sodium. | 10 | 10 | 10 |
| Dioxide of manganese..... .. ... | 10 | 7.5 | 5 |
| Crude sulphuric acid | 20 | 17.5 | 7.5 |
| Water. .. .. ..... | 10 | 10 | 10 |

Theoretically, 10 parts of pure chloride of sodium require 7.44 parts of pure dioxide of manganese, and about 17 parts of concentrated sulphuric acid for complete decomposition. These

* From Dr. Hirsch's Supplement zur Pharm. Germ, (see title on page 73).

proportions are most closely approached by the Danish Pharm. But since the commercial black oxide of manganese seldom contains more than sixty to seventy-five per cent of pure dioxide, the formulæ of the three other pharmacopœias are to be preferred; only the acid is to be somewhat reduced.

The effect of the two several method of the above mentioned three pharmacopœias depends, of course, upon the quantity of material used. When completely decomposed, 3.034 parts of a twenty per cent chloride of lime give out as much chlorine, theoretically, as one part of pure chloride of sodium.

For fumigating a space of 30 cubic meters, the Norwegian Pharm. directs 10 gm. (150 grs.) of cloride of sodium, 5 gm. (75 grs.) of black oxide of manganese, and 7.5 gm. (112 grs.) of sulphuric acid. Others deem a much larger quantity necessary, namely, respectively 30 gm. (1 oz.), 30 gm. (1 oz.) and 60 gm. (2 oz.).

The Swedish Pharm. develops the chlorine, for fumigations, from 1 part of black oxide of manganese and 3 parts of crude sulphuric acid, sp. gr. 1.165 to 1.170.

Note by ED. A. D.—When it is necessary to *disinfect* hospital wards, sick-rooms, the holds of ships, etc., with chlorine gas, much larger quantity of the ingredients must be used than are indicated by the formulæ above given. The expense, in such a case, is no factor to be considered. To be effective and thorough, the gas must be generated in such abundance that it will displace a good portion of the air and penetrate into every nook and crevice accessible to gas. If the atmosphere of the room to be disinfected is dry, the success of the disinfection will be doubtful. To be of real value, the walls and floors should be abundantly sprinkled or wetted down with water before the gas is developed, and the rooms closed. A still better way, where it is convenient to do so, is to inject a continuous, though small jet of steam into the room.

Every hole in the wall, crack in the windows, or other place where the generated gas could escape must be carefully closed up, which may be done partly by pasting strips of stout brown paper along the places, by means of mucilage or starch paste. To prevent the paper from peeling off, when dry—which will be usually be the case if it is directly applied to a painted or varnished surface, the places where the paper is to be applied are first sized by being rapidly brushed over (by means of a broad painter's or white-wash brush) with a watery solution of glue or gelatin.

The apparatus for disinfecting large rooms is best constructed in form of large shallow pans, made of sheet lead, and kept in shape by being put into a large wooden box.

For a room of a capacity of, say 7,200 cubic feet (40 feet long, 20 feet wide, and 9 feet high), which is to be *disinfected* after the occurrence of some contagious disease (puerperal fever, typhus, pyæmia, erysipelas, etc.), we have always considered an amount (in volume) of at least *one-fortieth* of the cubic capacity of the room to be necessary. It is true, a much smaller amount may often be sufficient, but it is better to err on the safe side.

According to the equation:*

| $MnO_2$ | + | $2NaCl$ | + | $2H_2SO_4$ | = |
|---|---|---|---|---|---|
| dioxide of manganese | | chloride of sodium | | sulphuric acid | |
| 86 | | 116.8 | | 196 | |

| = $MnSo_4$ | + | $Na_2SO_4$ | + | $Cl_2$ | + | $2H_2O$ |
|---|---|---|---|---|---|---|
| sulphate of manganese | | sulphate of sodium | | chlorine | | water |
| | | | | 71.8 | | |

and considering the commercial oxide of manganese to contain only 60% of available dioxide, and also considering the sulphuric acid to contain only 90% of absolute acid, the proportion of the ingredients would become, say in pounds:

Oxide of Manganese...130 lbs.
Chloride of Sodium...116.8 "
Sulphuric Acid.....218 "

The chloride of sodium is assumed to be pure. These substances would yield 71.8 pounds of chlorine, which would be equal to 358 cubic feet. As this is almost exactly one-twentieth of the cubic space (7,200 cubic feet) of the room we spoke of above, we need only *halve* the above quantities to obtain a volume of chlorine equivalent to *one-fortieth* of the cubic capicity. That is, we need

Oxide of manganese... 65 lbs.
Chloride of sodium.... 59 "
Sulphuric acid.....109 "

to which, however, at least 300 lbs. of water must be added, to facilitate reaction.

The tray, of sufficient capacity, having been placed in the middle of the room, on the floor, the manganese and salt are put in, thoroughly mixed with wooden stirrer, and the water added. The carboy of sulphuric acid is placed alongside the tray and in the neck of it are arranged one or more siphon-tubes directed to different parts of the tray. When all the cracks have been pasted up, the floor and walls wetted down, and everything is ready—only one door being left open, one of the persons starts the siphons running by blowing into a short tube passing through the cork of the carboy (or in any other manner). This must be done quickly. In fact, it had better be done so that the first portion of acid running from one siphon is caught by an attendant in a vessel, while another siphon is started. When they are all started, the attendants quickly empty the vessels in the tray, and rapidly retire from the room, which is immediately locked, and the door of which is made tight so that the gas cannot escape.

* Mn = 54.

### To Distinguish Bromides of the Alkalies.

H. HAGER says that when 0.4 gramme of a pulverized bromide be placed in a dry test-tube, and 4 or 5 cubic centimeters of a solution of cupric sulphate be allowed to flow down the side of the tube, the following effects will follow: When bromide of potassium is used and no iodide is present, it will remain uncolored. Bromide of sodium will be blackened, and, if pure, a greenish-blue solution will result. Bromide of ammonium gives a red-brown color.

### Giving Medicine to Dogs.

A WRITER in *Land and Water*, quoted by the *Chemist and Druggist*, advises pills as preferable to any other form of medicine for dogs, and says: "To force a pill, open a dog's mouth by pressing his cheeks between his teeth with the left hand, and drop the pill as far back as possible, and give it a push with a finger of the right hand. To deceive a dog into taking a pill, have the medicine in as small a compass as possible. Have three *cubes* of meat about the size of hazel nuts. Make a hole in one in which bury the pill. First give a piece without the pill, so that on biting it the animal finds nothing unusual. Next give the piece containing the pill, and at the same time show the third piece, which causes the dog to bolt the all-important morsel, that he may get the third bit. Large powders may be added to the food if not disagreeable to taste or smell. Small powders may be thrown into the back part of the mouth. In giving fluids from a spoon, force the mouth open as before directed, and with the right place the spoon against roof of the mouth. In the case of large or bad tempered dogs, place a tape muzzle on the nose and use a bottle. The head is to be raised, the lip drawn up above the tape on one side so as to make a funnel, and the fluid poured in, a little at a time. Fluids should never be forced on a dog with a sore throat, as they are liable to cause choking. Caustic or irritating substances should be well diluted. Volatile substances should not be given with warm water.

### Chlorophosphide of Arsenic.

Arsenic acid..... 4 grs.
Phosphorus..... 8 "
Diluted muriatic acid ..12 drs.
Water, sufficient to complete.....18 ozs.

Mix. Digest on a water-bath for 24 hours, and decant the supernatant liquid

**Vanadium Ink.**—Following the suggestion of Dr. Ure, made twenty years since, a mixture of vanadate of ammonium with nut-galls has often been spoken of as giving the very best black and indelible ink. A correspondent in Danville, Va., writes that in his experience the ink so made is no blacker than that made with nut-galls and iron, and not in the least degree more stable against chemicals. It is more expensive, and that is all that can be said of it.

### Incompatibles.

Wine of antimony..... 3 drs.
Wine of ipecac ..... 3 "
Tincture of sanguinaria. 2 "
Sulphate of morphia.... 3 grs.
Syrup of wild cherry... 3 ozs.

The precipitate formed is due to two causes: 1, the resin of the blood-root, which is not soluble in a watery liquid, like the syrup of wild cherry; 2, the incompatibility of the tartar emetic with the tannin present in the syrup, and which is more than sufficient to precipitate all of the antimony.

### Hypodermic Solution of Quinine.

D. E. Holt, of Woodville, Miss., recommends the following:

Sulphate of quinine....480 grs.
Diluted sulphuric acid,
Water of ammonia,
Water.....āā sufficient.
Alcohol of 95°..... 6 ozs.

Put the quinine in a quart graduate, add about a pint of water, and stir well with a glass rod; then gradually add diluted sulphuric acid until the quinine is dissolved. Add water of ammonia in small portions and with stirring until quinine ceases to be precipitated, and ammonia is in slight excess. Collect the quinine on a calico filter and wash it with water until free from sulphate of ammonia. Dry the quinine by pressure in a cloth. Break up the lump, put it in a graduate, and pour on the alcohol and stir with a glass rod until the quinine is dissolved. Then cover the graduate with blotting paper, and set it aside until the contents are reduced, by evaporation, to 5 ounces. Then filter into the stand-bottle through absorbent cotton in the neck of a funnel, pouring back the first ounce to catch any lint. Note the quantity of solution it took to saturate the cotton, and, at last, add an equal amount of alcohol to displace the solution. Label: Hypodermic solution of quinine, 4 grains to 20 minims. In dispensing, wash the vial and cork with alcohol and fill gently from the stock bottle, as this avoids filtering all but the last portion. In use, wet the needle and piston first with alcohol, as water will cause a precipitate, and wash them afterwards with alcohol. This is not apt to cause an abscess.

### The Preparation of Precipitated Oxide of Iron.

THOUGH it is generally supposed, particularly by beginners, that the precipitation of oxide of iron (ferric oxide) is one of the most simple and easy processes going, experienced pharmacists know well that this is not the case. Our readers have heard so much about this subject from ourselves and the usual works of reference in use here, that it will be of interest to them to hear what Dr. Hirsch * says on this subject.

In precipitating oxide of iron, the solutions must be *cold* and so far *diluted* that the iron solution contains not over 2 per cent of metallic iron, and the ammoniacal liquid not more than 2 per cent of gaseous ammonia. The iron solution must be poured into the ammonia, not vice versa. For stirring a *stout* stirrer should be used, so as to be able to stir briskly and cause a quick reaction between the substances. For the same reason the iron solution is to be added, not rapidly and in large volume, but in a *uniform, very thin stream*, perhaps with the aid of a narrow siphon. Both during the precipitation and after its conclusion the liquid must always have a decided alkaline reaction. The precipitate is collected upon a conical linen (bag) strainer of known weight and washed so that the surface of the precipitate is allowed to become exposed before a new portion of wash-water is added, which is then carefully stirred up with the oxide to a depth of 5, 10, 15, etc., centimeters, according to its total bulk. The stirrer and the inner sides of the strainer are then rinsed with plenty of water, which collects on the surface and acts by displacement. Next day the strainer is emptied by being turned inside out, well washed with water, the precipitate stirred up thoroughly with the washings until it forms a uniform thin magma, which is further diluted with water and again transferred to the strainer. This manipulation is repeated until the washings cease to affect solution of barium or silver salts. Three or four times are usually sufficient, even for very long strainers (up to about 1 meter in length). The precipitate is now allowed to drain well, the bag then tied firmly above the contents, the whole *weighed* and placed under the press, where it is subjected to a pressure which must be increased only *very* gradually and cautiously, to prevent rupturing the bag. Small filter-bags require about 6, large ones 12 or more hours. The expressed liquid is caught in a receptacle, and weighed from time to time, in order to have some approximate idea of the weight of the residue, which it is often useful to know. The pressure should be continued until the contents of the bag may be taken out in coherent pieces. Experience has shown that this is the case when the cake weighs about ten times as much as the metallic iron contained therein, or what is the same thing, when it weighs as much as the 10% iron solution originally employed. [The Liquor Ferri Sulfurici Oxydati of the German Ph., II., which has a specific gravity of 1.318 and contains 10% of metallic iron, is practically identical with the Liquor Ferri Tersulphatis of the U. S. Ph., 1880, the specific gravity of which is 1.320.] If the pressing is interrupted before, the residue will be a more or less dense magma, which separates from the strainer only with difficulty and is difficult to dry. Moreover, for some purposes, as for preparing the Liquor Ferri Acetici, Ph. G., it still contains too much water.

The washed and pressed hydrated oxide of iron is now to be *dried*. While the Pharm. prescribes a gentle heat, it would have been better to limit it at 20°–25° C. (68°–77° F.), and to have further demanded that the dry product should approximately contain three equivalents or twenty-five per cent of water, and that it should be easily soluble in cold diluted hydrochloric acid. For the solubility of the product, as well as its therapeutic value, diminish in direct proportion with its decrease in percentage of water.

The different hydrates have the following composition:

$Fe_2O_3.3H_2O$ = 214, cont. 25.234% water
$Fe_2O_3.2H_2O$ = 196, " 18.367% "
$Fe_2O_3.H_2O$ = 178, " 10.112% "

Upon this percentage of water depends, of course, also the final yield; 100 parts of the original iron solution (containing 10% of metallic iron), yield 19.1, or 17.5, or 15.9 parts of product respectively, according as it contains 3, or 2, or 1 equivalents of water.

Very curious is this property of hydrated oxide of iron that, while drying, it absorbs the carbonic acid gas of the air like a sponge, and may be again freed from it by mere heating with water. The presence of an alkaline base, in the oxide, is not at all necessary for this absorption to take place. The more amorphous and hydrated the product is, the larger is the amount of carbonic acid present, and vice versa. By long keeping, it loses a large portion of it.

* In his new work, the title of which is given in foot-note on page 73.

### Litmus Solution and Litmus Paper.*

To prepare a highly sensitive solution of litmus, Stutzer recommends the following method. Commercial litmus is dried, finely ground, and the coloring matter extracted with cold water. The united liquid extracts are filtered, evaporated to about one-fourth on a waterbath, then mixed with some clean sifted sand, and finally with enough hydrochloric acid to render the liquid faintly acid, whereupon the whole is evaporated to dryness. The dry residue is repeatedly extracted with alcohol of 80–85%, until the latter scarcely takes up anything more, and the remaining residue of litmus and sand is evaporated to dryness on the waterbath. For use, portions of this are extracted with hot water to which a few drops of ammonia are added. The liquid is poured off from the sand and transferred to high glass-cylinders, in which all the suspended particles will settle to the bottom within twenty-four hours. In this way, the exceedingly tedious filtration of a concentrated, turbid litmus solution is avoided. Portions of the clear solution (or the whole of it, according to circumstances) are then poured into cylindrical glasses (test-tubes, etc.), and carefully neutralized with diluted sulphuric acid, or with ammonia as the case may be, so that the liquid has still a distinctly blue color. The proper tint will be indicated by the fact that 3 or 4 drops of the liquid mixed with 25 Cc. of distilled water will soon color the latter onion-red, in consequence of the carbonic acid held in solution by it. When requiring some of the litmus solution for titration, it is best to remove the requisite quantity by means of a small glass-tube serving as a pipette.

If prepared in the described manner, the litmus solution is free from all impurities which interfere with its sensitiveness, and only contains the real blue coloring matter, the so-called azolitmine. The hydrochlorate of azolitmine is insoluble in water and alcohol, and may thus be separated from the other coloring matters. If an alkalimetric titration is performed with the above-described litmus solution, the onion-red coloration (as soon as a trace of acid is in excess) appears suddenly and sharply without intermediate tints. Hence, the use of such a purified litmus solution is highly to be recommended. As its preparation is somewhat circumstantial, it is best to make a larger quantity at a time. The residue of sand and pure litmus can be kept unchanged for any length of time, and any desired quantities of it may be deprived of the coloring matter by treatment with water and some ammonia. Of course, this purified litmus solution is chiefly intended only for use in scientific analysis, and in experimental, technical or manufacturing laboratories; while it would be unnecessary for the daily control analyses of large works (as, for instance, soda works) which consume a large quantity of litmus.

It should be added that a considerable portion of coloring matter is lost in the preparation of the litmus purified according to Stutzer's process. This feature is, of course, of more importance in factories (which often consume 200 to 300 pounds of litmus per year) than in scientific laboratories.

*Litmus paper* is prepared with the aid of the solution of litmus just described, made sensitive by the cautious addition of sulphuric acid. The selection of a suitable paper is also of paramount importance. Among the best is fine letter-paper known in commerce under the name "papier vergé."

This paper is laid, in half sheets, into the tincture contained in a porcelain dish, and the sheets turned over so that both sides receive an equal amount of coloring matter. The sheets are removed after a while, allowed to drain, and, if necessary, deprived of excess of liquid, by swinging about, and finally hung up on strings, in the room, to dry.

In this way an exceedingly sensitive light bluish-violet litmus paper is obtained which is best kept in form of half-sheets. When cut in strips, these must be kept in a bottle or box, and must not be exposed directly to the atmosphere prevailing in the factory or laboratory.

Only if prepared in this manner is litmus paper really sensitive. When withdrawn from the solution, the moist sheets must have rather a reddish than a violet tint. When dry, they assume a bluish-violet tint, while, if the paper had a violet color when moist, it would turn blue on drying.

* Extract from a work by DR. FR. BÖCKMANN, entitled: *Chemisch-technische Untersuchungsmethoden der Gross-Industrie, etc.* 8vo, Berlin (Springer). Vol. I., pp. 43. This work can be specially recommended to practical analysts.

### Cultivation of Castor Oil Plant.

THE Revenue and Agricultural Department of the Government of India has published a "Note on Castor Seed," drawn up by Mr. T. N. Muckarji, giving particulars of the method of cultivating the castor-oil plant and preparing the oil. As the plant is cultivated in our Western States, we reproduce the salient points for the benefit of our readers there. The plant may be grown on almost any kind of soil, although it loves a sandy loam, and will not grow well on clays. It does not require any special care, besides the ordinary ploughing and manuring bestowed on cereal crops. In upper India, it is sown in March or April, two or three months before the rains, and in July at the beginning of the rainy season. The fruit of the first sowing ripens in November and continues to yield seed till March; that of the second sowing ripens in May. The plants, which grow eight or ten feet high, are cut down after having borne for one year, as the second year's produce is inferior in quality and less in quantity. The seed is soaked, for twelve hours, in water, and is then sown by hand, one yard apart. Twelve pounds of seed are required for an acre. The crop needs no further care, except watering, if the weather is too dry. The fruits are plucked by hand before fully

ripe, and exposed to the sun; when dry, the seeds are separated from the outer shell.

The oil, roughly prepared by the natives, is very impure, thick, and viscid, and smokes offensively when burnt in lamps. It is also used to anoint shoes, water-bags used for raising water from wells, and other agricultural appliances made of leather. (It is said that rats will not attack leather so treated.) The makers for export sell four qualities: No. 1, cold-drawn; Nos. 2, 3, and 4, coal-drawn.

Messrs. Khettra, Mohan & Bysacks, of Calcutta, have supplied details of the processes they employ. For the cold-drawn, the seeds are cleaned by hand by women. A quantity of the seeds are placed on a board, and are struck once or twice with a mallet, which breaks the seeds into two or three pieces; they are then winnowed, dried in the sun, broken by a crushing-machine, placed in small canvas-bags, and pressed in a hand-machine. The oil is bleached by exposure to the sun in large, open galvanized iron vats. This also causes the sediments to precipitate. It is then boiled, to remove the last traces of moisture. Vegetable charcoal is then added, and the oil is thrice filtered through flannel or blotting-paper.

The coal-drawn No. 1 is made in the same way, except that fire is put beneath the press at the time of pressing, and a mixture of animal and vegetable charcoal is used when filtering. These two qualities are only made to order. Coal-drawn 2 is made as above, but is not filtered: it is largely made and exported. Coal-drawn 3.—The seed is husked by machine; the oil is therefore not so clean. It is not filtered. The seeds have been found to yield 34 to 35 per cent of oil. The husk is used for fuel. The oil-cake contains a large amount of phosphates, and is an excellent manure for sugar cane, potato, or coffee. A case has been known where it has been substituted by mistake for rape-cake; several sheep died from the effects of eating it before the mistake was discovered.—After *Chem. and Drug.*

### Solution of Ferrous Iodide.

WHILE commenting upon the method of making the syrup of iodide of iron, known as Dupasquier's,* Dr. Uggeri Francesco proposes an improved method of preparing the solution of ferrous iodide so that it will keep without the necessity of adding sugar. While this improved method is not new, having been advocated years ago in this country, yet it deserves to be again recorded, since it is of more value than has been supposed. The process is the following:

| | |
|---|---|
| Iodine, resublimed | 8 parts. |
| Iron, in powder | 2.5 " |
| Glycerin, pure, 30° B. | 90 " |

Weigh the glycerin and the iodine into a porcelain capsule and heat the mixture on a water-bath until the iodine is dissolved. Now add the iron in small portions at a time, constantly stirring, and keep the temperature at 80° C. (176° F.). Fifteen minutes after the reaction is terminated, and the liquid has required a dark-green color, set the capsule aside so that the excess of iron may deposit. Then decant the liquid carefully into a glass-stoppered bottle and set this aside. After a few days the remaining suspended iron will settle to the bottom, so that the clear liquid may be decanted. The liquid is too dense to make filtration advisable, except with the aid of a rapid-filtering apparatus.

The solution thus prepared has a green color verging to black when in bulk; it has a sweet, astringent and ferruginous taste, and is free from odor. It is miscible with water in all proportions and contains 10 per cent of ferrous iodide. In this form, the solution keeps perfectly.

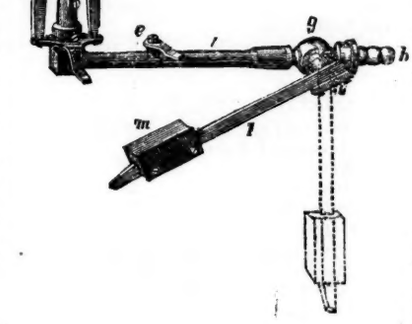
Dupasquier's Syrup of Iodide of Iron may be prepared from this solution by mixing

| | |
|---|---|
| Solution of Ferrous Iodide | 6 parts |
| Syrup of Orange Flower Water | 24 " |
| Simple Syrup | 70 " |

—*Bolletino Farm.*, 1883, 155.

### Delicate Test for Gallic Acid.

ACCORDING to Sydney Young, an aqueous solution of gallic acid, when treated with solution of cyanide of potassium, acquires at first a fine red color which soon disappears if the liquid is allowed to stand quietly. On shaking, however, the color reappears, and again disappears on standing. This change may be reproduced fifteen to twenty times. Pure tannic acid does not show this reaction; but in commercial tannic acid the presence of gallic acid may be shown either directly, or by testing the ethereal extract. —*Ber. D. Chem. Ges.* and *Ch. Centralh.*




### GAS-BURNER WITH AUTOMATIC SHUT-OFF.

THE gas-burner here described was constructed by Pfeil for the Physiological Institute at Berlin for the purpose of shutting off the gas of burners automatically, in case the supply should accidentally give out.

The construction is quite simple. At *h*, the apparatus is connected with the gas supply; *g* is the stop-cock, having a long, lever-like handle, which may be weighted more or less, by pushing the sliding weight towards the end.

When turning on the gas of the burner, the lever-arm is first laid upon the swivel *e*. The heat of the gas expands the two spirals *b* and *c*, which are constructed of different metals, so as tc have a different rate of expansion, the spirals being connected by a rod which revolves along the edge of the burner. Gradually the spirals will assume such a position that the end of the lever may be placed upon the projecting ledge *f*. Should the supply of gas fail and the burner become cold, the spirals would begin to contract and resume their original position, whereby the supporting ledge *f* would be drawn away from under the lever *l*. The latter would then sink and shut off the gas.

These burners are made and sold by Jul. Schober, of Berlin.—*Chem. Zeit.*

**Sulphuric Acid from Pyrites.**—It is said that commercial oil of vitriol, of 66° Baumé, can now be made from iron pyrites at a cost of one cent per lb.

### Eno's Fruit Salt.

AN article resembling "Eno's Fruit Salt" is said to consist of

| | |
|---|---|
| Rochelle Salt | 3 parts |
| Tartaric Acid | 24 " |
| Bicarbonate of Soda | 30 " |
| Powdered Sugar | 80 " |

With a flavor of lemon.

—*New Idea.*

**Albespeyre's Blistering Plaster** (*Ind. Pharm.*).

| | |
|---|---|
| Linseed oil | 1⅝ ounces. |
| Beeswax | 4¼ " |
| Pitch | 14⅝ " |
| Cantharides, powd. | 11⅛ " |

Melt the pitch, oil, and wax together.

**Dr. Mittauer's Aperient Mixture** (alkaline mixture of aloes).

| | |
|---|---|
| Aloes | 2½ ozs. |
| Bicarbonate of sodium | 6 " |
| Comp. spirit lavender | 2 " |
| Water | 4 pints. |

Mix. Macerate for 2 weeks and filter. Dose: 1 fl. dr. to 1 fl. oz., half an hour after meals, for costiveness.

**Marking Ink.**—Cut lampblack with the least possible quantity of alcohol, and then dilute the paste with the following:

| | |
|---|---|
| Borax | 3 drs. |
| Water of ammonia | 2 " |
| Shellac | 2 ozs. |
| Water | 1 pt. |

Mix, and digest at a gentle heat, with occasional agitation, until the shellac has dissolved and the smell of ammonia has disappeared. Finally replace the water lost by evaporation.

**Glycerite of Tar,** made according to the following formula, according to T. S. Wiegand, is miscible with water in all proportions, and yields a clear liquid:

| | |
|---|---|
| Oil of Tar | f. ℥i. |
| Alcohol | f. ℥ij. |
| Glycerin, | |
| Water, of each | f. ℥iv. |
| Carb. magnesium | q.s. (or ℥vi.) |

Mix the oil of tar with the alcohol, and rub these thoroughly to a smooth paste with the magnesia; to this add the glycerin and water, previously mixed, and place in a well-corked bottle; shake frequently for several days, and then filter through paper.

*Syrup of Tar* may be made by mixing ℥ij. of the glycerite with ℥xiv. of syrup.

*Wine of Tar* may be made by ℥iij. of the glycerite, ℥iv. of sherry wine, ℥ij. of syrup, and enough water to make one pint.—*Ind. Pharm.*

**Emulsion of Copaiba.**—Query, How best to dispense?

| | |
|---|---|
| Balsam of copaiba | 12 drachms. |
| Powdered extract of licorice, | |
| Powdered acacia, of each | sufficient. |
| Camphor water, enough to make | 3 ozs. |

*Ans.* Place in a dry mortar 6 drachms each of powdered acacia and extract of licorice (thoroughly dry) and pour on the balsam. Mix well, and add, at one time, 12 drachms of camphor-water. Continue stirring until the mixture is complete, scraping the sides of the mortar and pestle occasionally. Then add the camphor water little by little, until the total amount of 3 ounces is obtained.

### Butter Color.

| | |
|---|---|
| Annatto | 1 oz. |
| Turmeric | 1 " |
| Olive oil | 3 ozs. |
| Spanish Saffron | 1 drachm. |
| Alcohol | 5 drachms. |

Macerate the annatto and turmeric for four days in the oil, and the saffron in the alcohol for the same length of time. Filter the first, adding enough oil to complete the measure. Add the tincture of saffron and evaporate the alcohol with the aid of a gentle heat.

* The original formula of this is the following:

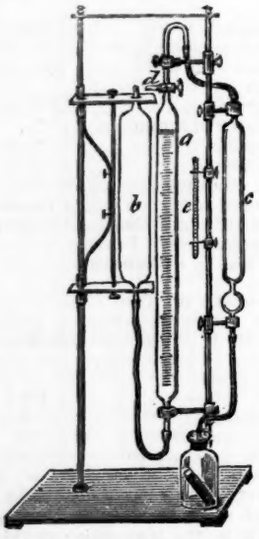
| | PARTS. |
|---|---|
| Solution of Ferrous Iodide 10 per cent | 30 |
| Syrup of Acacia | 220 |
| Syrup of Orange Flower Water | 60 |

It has been modified in various ways.

### APPARATUS FOR DETERMINING LARGER QUANTITIES OF CARBONIC ACID.

Two stout metallic rods, each about three feet long, are fastened into an open base, and connected, above, by a cross-piece. One of the rods carries a double shelf holding the levelling-tube *b*, while to the other are fastened, by adjustable clamps, the gas-measuring tube *a*, the air-tube *c*, and the thermometer *e*.

The measuring-tube, which is graduated into 200 (or 300) *cc.*, is provided, at *d*, with a three-way stop-cock, which establishes communication either with the outer air, or with the air-tube *c*, that is, with the generating vessel below. The small tube for holding acid, in the generating vessel, is made of hard rubber. The tubes *a*, *b*, and *c* are connected with each other by flexible tubing. While the levelling-tube *b* is short and wide, the measuring-tube has such a diameter that 0.5 *cc.* can be exactly read off.




The practical application of the apparatus is evident from the illustration. The measuring-tube *a* and the levelling-tube *b* having been charged with enough mercury, or some liquid which will absorb carbonic-acid gas slowly, so that the level of the liquid in *a* stands equal to the top-line of the graduated scale, and the tube *b* being raised at the same time, so as not to be more than half-filled—the generating vessel is then tilted to one side, so that the acid may run upon the weighed carbonate contained in it. The stop-cock *d* having previously been so turned that tubes *c* and *a* communicate with each other, the generated carbonic acid gas will increase the volume of air in *c*, and push down the level of the liquid in *a*. To facilitate the complete evolution of the gas, the levelling-tube *b* is lowered, so as to reduce the pressure in *a*. When no more increase of volume is noticed, tube *b* is again raised, until the level of the liquid in *b* and *a* is identical. The volume of displaced liquid in *a* then corresponds to the carbonic acid gas liberated, which is found by calculation (the temperature being noted), or by inspecting tables constructed for the purpose.

The apparatus is made and sold by Dr. Robert Muencke, of Berlin.—*Dingl. Pol. Journ.*

### To Preserve Yeast.

FRESH yeast is covered with water and thoroughly agitated or shaken with it. It is then allowed to deposit, the supernatant water poured off, and the residuary yeast mixed with enough sugar to prepare a thick syrup which must be kept in full and well-stopped bottles.—*Pharm. Zeitsch. f. Russl.*

### Fumigating Paper.

THERE are two kinds of fumigating paper in use, one which burns or glows when ignited, and another which does not burn, but is only carbonized.

Though the latter kind would be preferable, because a slow volatilization and combustion does not injure the fine aroma of certain substances as much as a higher heat, yet the precaution to place this kind of paper only on a moderately warm place of the stove is so generally disregarded that it is better, after all, to furnish only the combustible paper. In fact, most customers who call for fumigating paper are accustomed to the latter.

Before impregnating the paper with the aromatic substances, it must be prepared with a substance which will cause it to be readily carbonized or burned.

1. *Incombustible Paper.* — Dense, sized paper is saturated with a solution made from one part of alum and ten parts of distilled water, and dried.

2. *Combustible Paper.*—Very fine tissue or cigarette paper is saturated with a hot solution containing one part of nitrate of potassium in ten parts of water, and then dried. This process is several times repeated.

Either one of the above kinds of paper may be colored by adding to the solution of alum or saltpetre some water-soluble aniline color, such as eosine, brown, methyl-green, nigrosin (G. G.), indigo-blue, methyl-violet, silver-gray, phosphine, orange, etc.

The aromatic solutions with which the paper is next to be impregnated may be prepared after formulæ like the following:

| | | |
|---|---|---|
| 1. Bretfeld spirit | 1000 | parts. |
| Myrrh | 40 | " |
| Benzoin | 500 | " |
| Oil of rose | 6 | " |
| 2. Bretfeld spirit | 750 | parts. |
| Balsam of Tolu | 200 | " |
| Benzoin | 100 | " |
| Tonka bean | 25 | " |
| Oil of Vetiver | 30 | " |

Bretfeld spirit is prepared thus:

| | | |
|---|---|---|
| Orris root | 250 | grammes. |
| Musk | 0.15 | " |
| Alcohol | 2240 | " |
| Oil of lemon | 60 | drops. |
| Oil of rose | 60 | " |
| Oil of neroli | 90 | " |

[Another formula will be found in NEW REM., 1883, 54; but Mr. Vomacka says that, for the purpose of making perfumed fumigating paper by means of the formulæ previously given, this formula for Bretfeld spirit is specially modified.]

Digest the resinous substances with the Bretfeld spirit until they are dissolved, then add the essential oil, and decant the clear liquid after a few days.

Pour some of the solution into a flat-bottomed vessel, draw the prepared paper through it, allow it to drain over the vessel, and then hang it up on strings, in a warm place, to dry.

According to the author, the second formula above given yields a finer product than the first.—AD. VOMACKA, in *Der Seifenfabrikant.*

**Calomel as a Rat Poison.**—J. C., of Mt. Vernon, Ind., says that the addition of calomel to flour paste (about 1 part to 20) will effectually protect it from rats, for which it is a sure poison.

### The Practical Uses of Peroxide of Hydrogen.

PEROXIDE of hydrogen, at one time a chemical curiosity known only in the chemist's laboratory, and for many years subsequently only employed in very limited quantities for a few special purposes, has of late years become one of the articles which are made on a grand scale for technical uses, particularly for bleaching fabrics and other articles. A few practical hints in reference to the best method of using will be found of general interest.

*Bleaching of Animal Substances.* Anything which is to be bleached by peroxide of hydrogen must be brought to such a condition that water will be able to thoroughly *wet* the substance; hence all fatty substances, and adhering impurities, must be removed, which is best done by a bath of soap or a 3 to 5 per cent solution of carbonate of ammonium. The prepared substances are then dipped into the peroxide of hydrogen solution, allowed to be perfectly penetrated, then taken out and slowly dried in a current of air, at a temperature not exceeding 20° C., (68° F.). As the water evaporates, and the peroxide of hydrogen becomes more concentrated, the process of bleaching progresses more energetically.

*Bleaching of Hairs.* The hairs should be digested with a 3 per cent solution of carbonate of ammonium at 30° C. (86° F.) for 12 hours, then treated with soap-suds, and finally again digested with solution of carbonate of ammonium. When thoroughly washed, they are placed into peroxide of hydrogen, which should previously be perfectly neutralized with ammonia.

*Bleaching of Feathers.* These are first digested with a ½-per-cent solution of carbonate of ammonium for 12 hours at a temperature of 20° C. (68° F.). Next they are gently drawn about in a lukewarm solution of Castile soap, and finally well washed in soft water. Hot or boiling liquids would injure the feathers. Instead of using alkalies, benzin or ether may be employed. The peroxide solution must be carefully neutralized and the bleaching must be done in earthenware or stone vessels, not in metallic or wooden vessels; when fully bleached, the feathers are exposed to a current of air of low temperature and repeatedly beaten. It has been proposed to dust them, while still damp, with some inert powder (talc, etc.), and to complete the drying afterwards. This has the advantage of preventing them from becoming brittle. A further improvement consists in dipping the bleached, and still damp feathers in alcohol, which coagulates the gelatinous constituents, and causes the feathers to have a very handsome appearance.

*Bleaching of Bones and Ivory.* Having been completely deprived of fat, either by superheated steam, or preferably by solvents, like carbon disulphide, ether, benzin, etc., they are immersed in the peroxide, previously almost entirely neutralized, and left there as long as necessary.

*Bleaching of Sponges.* The latter are well washed and cleaned in lukewarm water, and having been strongly expressed, dipped into the peroxide, previously completely neutralized with ammonia.

### Emulsions.

C. S. HALLBERG, writing in *The Druggist*, says that the days of ready-made emulsions are numbered; the chief cause of their decadence being that the qualities which render an emulsion acceptable to the palate, and facilitate its assimilation, are incompatible with permanence and stability. The permanent character of many emulsions is due to their consistence—as illustrated in condensed milk and an emulsion of cod-liver oil with malt extract. Of the various emulsifying agents thus far recommended, acacia and tragacanth gums are probably most useful, the former being probably the most reliable, convenient, and least innocuous agent yet offered.

The late Prof. Prof. Proctor announced the following proportion of gum acacia as the one for forming a perfect temporary emulsion: "Mix intimately, in a perfectly dry mor-

tar, the oil with one-half its weight of powdered acacia; to this add, at once, one-half as much water as the combined weight of oil and gum, and triturate briskly until the mixture has assumed the color and consistence of a thick cream, which produces a crackling noise when the pestle is moved rapidly around the sides of the mortar." To this can be added any amount more of water or other desirable vehicle or medicament to bring the finished preparation up to the quantity prescribed.

If perfectly made, this emulsion will stand any degree of dilution with watery mixtures; in fact, its quality is proved when, by a large addition of water, the oil globules will not separate and collect at the top of the liquid.

Practice has demonstrated that the proportion of gum can be varied according of the nature of the oil employed, but the constant relation between the water used for the emulsion proper and the mixture of oil and gum must be scrupulously adhered to as insuring infallible results.

Fixed oils, rich in gum, such as copaiba, castor oil, etc., do not require as large an amount of gum as cod-liver oil, while for ethereal oils, such as turpentine, an equal amount of gum is requisite.

### Preparation of Bismuth Absolutely free from Arsenic.

To prepare not too large quantities of absolutely pure metallic bismuth, and free from every trace of arsenic, Löwe proposes the following method in the *Zeitschrift f. Anal. Chem.*

Commercial bismuth is treated with a sufficient quantity of nitric acid to dissolve it, with the aid of heat. Any tin or antimony present will thereby be left behind. The clear solution is transferred to a flask and diluted with distilled water as far as it is possible without producing a cloudiness. The bismuth is then precipitated by soda solution, and when the precipitation is completed, one and a half times as much more of the soda solution added as had already been used. Next a sufficient amount of dense glycerin is added to re-dissolve the precipitate, or at least the greater part of it, for, if the metal was very impure, small amounts of iron, nickel, and similar metals will remain behind as oxides. Up to this point no arsenic has been separated because the arsenate of bismuth is likewise soluble in an alkaline solution containing glycerin. A few drops of solution of carbonate of sodium are now added, the liquid filtered off after twelve hours from any residue, and the filtrate mixed with four to five times as much grape-sugar as the original weight of the bismuth, the sugar being previously dissolved in eight times its weight of distilled water. If commercial grape-sugar is used, which is never pure and always contains lime, it is dissolved in six to eight parts of water in a flask, and solution of carbonate of sodium added until this ceases to produce a precipitate. The liquid is then heated on the water-bath, which will cause it to become quickly clear; it is then allowed to become entirely cold or may be cooled rapidly by placing the flask in cold water, a few drops of solution of soda are added, and the whole is set aside, well corked for some time. It is then filtered and added to the bismuth solution.

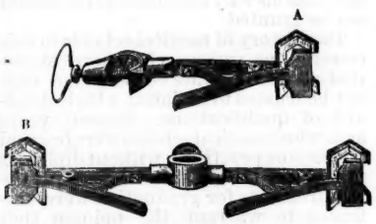
The mixed liquids are set aside, in a tightly closed flask, in a moderately warm and dark place, until any silver or copper present are precipitated, the former as metal and the latter as suboxide. The removal of copper may be recognized by the disappearance of all blue tint. The mixture is now again filtered. Next, the yellowish filtrate is poured into a flask which is set in a cold saturated solution of common salt, and heated for some time to boiling, whereby the liquid assumes a deep-brown color, and all the bismuth present is precipitated as gray metallic mud, while all the arsenic remains in solution. When the reduction is finished, the metallic precipitate is washed, until the wash-water has only a slight yellowish tint, whereupon it is mixed with a one-per-cent sulphuric acid, and finally completely washed with water. The drying of the finely divided metal must be hastened by placing it upon porous clay-tiles and passing a warm current of air over it, since it will otherwise become slightly oxidized in some places. After being thoroughly dried, the metallic powder is firmly pressed into a porcelain crucible, covered with lamp-black and, after the cover has been luted on, the metal melted. It will then be absolutely free from arsenic.

### "Bromine-Sticks."

In our last volume (New Remedies, 1883, p. 297) we gave an account of a method patented by A. Frank to use bromine as a disinfectant. The inventor mixes the bromine with *kieselguhr* (a porous, siliceous fossil earth), which permits it to be handled with the greatest ease.

The same inventor now places this substance upon the market (through the chemical works of E. Schering, in Berlin) in form of thin sticks, which permit quite an exact measurement of any desired quantity of bromine, since the sticks contain almost exactly 1 gramme of bromine in each centimeter of length.

These sticks will probably be found useful also in chemical laboratories, if it is desired to oxidize some substance by means of small quantities of bromine.—*Pharm. Centralh.*, No. 8.




NEW BURETTE CLAMPS.

The clamps here illustrated have the double advantage that they may receive and hold burettes of any diameter, and so that the graduated scale may be easily read, but also that the burette may be quickly taken out and exchanged for another.

The holder consists of an arm fitting to the upright rod of a retort-stand in the usual manner. At its outer end it has an angular claw, the open side of which is closed by a plate pressed against it by a spring acting upon its handle. The inside of the claw and plate are covered with a thin layer of cork. The clamp is either single or double. By a pressure upon the projecting handle of the plate-piece, the burette is readily disengaged. When held in place, its front is not grasped by any part of the apparatus; hence the graduated scale is always fully exposed. This new burette clamp is made and sold by Dr. Robt. Muencke, of Berlin, and may be obtained here through dealers in chemical apparatus.

**Prescription Difficulty** (*Ind. Phar.*).

| | |
|---|---|
| Chlorate of potassium | 30 grs. |
| Borax | 15 " |
| Tr. cubebs | 2 drs. |
| Mucilage of acacia | 2 oz. |

Sig. Dose, a teaspoonful.

It has thus far gelatinized on each occasion when its preparation has been attempted.

**Tolu Rock and Rye** (*Ind. Pharm.*).

| | |
|---|---|
| Good whiskey | 1 gallon. |
| Rock candy | 4 pounds. |
| Gum tolu | 2 ounces. |

Put the whole into a two-gallon jug, set in a warm place, and agitate several times a day until the candy is dissolved. Then strain through flannel or coarse muslin.

[The proportion of sugar appears to us larger than good whiskey will dissolve, and it may be remarked, in passing, that it is reported that the original "rock and rye" contained figs among its ingredients.—Ed. Am. Drug.]

**Wizard Oil** (*Ind. Pharm.*).

The following mixture produces something resembling this nostrum:

| | |
|---|---|
| Oil of cloves | ½ oz. |
| Water of ammonia, | |
| Ether, | |
| Oil of turpentine, of each | ½ " |
| Chloroform | 1 dr. |
| Camphor | 2 drs. |
| Oil of sassafras | 1 oz. |
| Alcohol, sufficient to make | 1 pt. |

Mix, and dissolve.

**Florida Water** (*Drug. Circular*).

| | |
|---|---|
| Oil of lavender | 4 fl. oz. |
| Oil of bergamot | 4 " |
| Oil of neroli | 2 fl. dr. |
| Oil of orange | 4 " |
| Oil of clove | 1 " |
| Pure musk | 4 grains. |
| Cologne spirit (96%) | 1 gallon. |
| Tincture of Tonka bean | sufficient to color. |

Macerate for 15 days, and filter through paper.

**St. John Long's Liniment** (*Med. Times*).

The following is the formula employed by Jacob Hecker, Ph.G., the apothecary of the Pennsylvania Hospital, Philadelphia: The yolk of 8 eggs; 24 fl. oz. of turpentine; 16 fl. oz. of acetic acid, and 24 fl. oz. of water. The yolks, with a small quantity of the water, are to be briskly shaken in a gallon bottle, then the turpentine is to be added in small portions with continued shaking, then the acid, and finally the water are added, with similar shaking, until the mixture is completed. A drachm of good oil of lemon to each pint is an improvement.

**Sorel's Cement** for filling cavities in teeth is made by adding, rapidly, deliquescent chloride of zinc to enough oxide of zinc to make a thick paste, and applying it immediately.

*Phosphate of Zinc Cement*, said to be more durable and less irritating, is made by mixing oxide of zinc with syrupy phosphoric acid made by boiling the officinal concentrated phosphoric acid until the temperature rises to 215° C. (419° F.).

**Lime-Juice and Glycerin.**

| | |
|---|---|
| Lime, or lemon-juice | 8 ozs. |
| Rose-water, | |
| Elder-flower water, | |
| Alcohol, of each | 2 " |
| Glycerin | 3 " |
| Oil of lemon | 30 drps. |

Heat the lemon (or lime) juice in a porcelain dish to nearly the boiling point. When cool add the aromatic waters and the alcohol, and mix the whole well together. After 24 hours' repose, decant or filter, and then add the glycerin and oil of lemon with thorough shaking.

### Dr. Syke's Catarrh Cure.

Mr. D. S. Sager, chemist, of Brantford, Canada, writes us that an analysis of a package of this substance showed that it consisted of between 66 and 67 per cent of chlorate of potassium, with powdered licorice-root and a small amount of brown powder not analyzed. The liquid is made by adding the powder to a stated amount of water, filtering out the sediment, and flavoring with wintergreen.

THE

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## EDITORIAL.

### The Alcohol Tables of the U. S. Pharmacopœia.

MR. GUSTAVUS PILE, of Philadelphia, states that the tables of Hehner given in the U. S. Pharmacopœia are not correct enough, since "alcohol having a specific gravity of 0.8157 has been regarded as 95 per cent for so long a time that it would seem to be difficult to interpret it any other way; but, by the adoption of the tables of Hehner, such will be the case, and 95 per cent will have a specific gravity of 0.8161, and so on." Mr. Pile points out that Hehner's tables differ here and there materially from those of Tralles, and that they might mislead one in determining the value of alcoholic mixtures.

It is quite true that the United States Government determines the duty on alcohol by Tralles' scale. The latter, however, has never been calculated to such a detailed range as Hehner has done. In view of the general utility of a table calculated to four decimals for every specific gravity between absolute alcohol and pure water, the Committee of Revision adopted Hehner's tables *in toto*, specifying, however, in the title expressly "Alcohol, according to Hehner." It would have been impossible for the committee to find the time to calculate a similar table, based on Tralles' scale, without delaying the appearance of the U. S. Pharmacopœia too long. For all practical purposes, Hehner's table agrees well enough with Tralles', and it is yet a question, to be decided hereafter, whether Tralles' scale is really correct in every respect. At the same time, Mr. Pile has pointed out that Hehner's tables contain certain undoubted errors, for instance, in using two different values to denote the specific gravity of water, namely, that at 60° F. in the beginning, and that at 39° F. at the end.

We are now indebted to Mr. Pile for a new table calculated on the basis of Tralles, and carried out to the same detail as Hehner's. The calculation of this has cost the author "considerable time," as we can readily believe. No doubt, had the Committee of Revision been in possession of this table, it would probably not have selected that of Hehner.

When the committee will have occasion to again discuss the subject of tables to be appended to the pharmacopœia, it will, no doubt, take such action as will remove the apparent discrepancies between the Custom-House standard and that adopted by the U. S. Pharmacopœia.

### Colleges of Pharmacy and Legislation.

ONE of the obstacles met with in securing the enactment of laws regulating the practice of pharmacy has been the desire of some of the colleges of pharmacy to include a provision whereby graduates in pharmacy shall be licensed in virtue of their holding a diploma and without the necessity for submitting to an examination by a State board of pharmacy. Thus far such efforts have proved, in the main, unavailing, and there seem to be excellent reasons why such exemption should not be granted.

The history of medical schools in this country, as well as elsewhere, shows that all such private corporations cannot be trusted to maintain a high standard of qualifications. Several years ago, when medical schools were few and physicians practising without diplomas numerous, the general character of the requirements for graduation were sufficient to warrant the opinion that most medical graduates were fairly qualified to practice, but no limit has been placed upon the increase of such schools, and since the mere possession of a diploma granted by schools in which the teachers were also the examiners was all-sufficient to secure a license to practise, the character of many schools deteriorated until of some it might well be said that they were mere "diploma mills." What is to prevent a similar state of affairs at some future day if the mere possession of a diploma from some pharmaceutical college is to be a legal evidence of fitness? Already in some States, the medical profession, as a matter of self-protection and in the interests of the public, have secured the enactment of laws which vest the power of licensing to practise in a board which is independent of the colleges, and the result has been to convert the colleges, so far as those States are concerned, into merely teaching bodies. An effort to accomplish the same end is already on foot in New York State, and with some promise of success. With this experience in the medical profession, it is no time at the present day to repeat the error among pharmacists, and we hope that the schools already established will appreciate what seems to us self-evident, that the best way to secure their own prosperity and prevent the organization of poorly equipped competitors who will surely underbid them in fees, is to urge the enactment of laws which shall take no account of the existence of pharmaceutical schools, but subject every applicant for a license to a fair examination. It will then remain optional with each one whether to secure his training in or out of a school of pharmacy. It is quite evident that many will prefer the former course. It is also most likely (circumstances permitting) that such pupils will resort to the school whose graduates succeed best in passing the examination of the licensing board. In other words, old and well-tried schools will flourish and new ones be discouraged. As the requirements are rendered more stringent, classes will increase in size and the colleges will, moreover, escape the opprobrium which has been borne by the medical schools, of having their diplomas counted as so much paper because of the difficulty of knowing what schools are good and what schools are fraudulent. F. A. C.

### Drug-Raising in California.

THE following, from one of our medical exchanges, was not properly accredited by our copyist. It refers to a subject just now of special interest to pharmacists, and we therefore insert it. The writer does not mention the obstacles in the way of medical men who undertake this work, but we infer them to be such as belong to their practice. It would be of interest to many readers if some of our California readers could add something to our knowledge of this subject.

Dr. L. D. Morse, of San Mateo, Cal., writing upon the above subject, says that he doubts if it is practicable for young or old physicians, individually, to undertake the expense and special care necessary for raising medicinal herbs, etc. He thinks, however, that more of the drugs now imported should be raised in this country, and he states that an association has been formed in California to undertake the cultivation of a drug farm. He writes: "In many of the interior valleys of California, rhubarb may be grown, probably of as good quality as is produced anywhere else in the world. So also, ipecacuanha, ginger, and a score of other valuable drugs now imported. Vanilla beans can, undoubtedly, be grown here. Even if the best varieties should be grown under glass, artificial heat would not be needed, and the high price they command would yield profitable results. Licorice is already quite successfully grown in at least one locality in this State. In the experimental grounds of the State University, at Berkeley, cinchona trees are growing. They are not considered really successful, but there are other localities in the State, with climate and soil quite different, where they may prove quite successful. The camphor tree at Berkeley, I believe, promises very well."

OUR friends, Prof. J. U. Lloyd and Mr. C. G. Lloyd, are about to publish, in three-monthly numbers, an extensive work on the "Drugs and Medicines of North America," with botanical, pharmacognostic, and other illustrations, and with an exhaustive text, based upon all that has previously been published, and embodying their own observations. From what we have seen of the work, it will fill a long-felt want, and will become a standard authority. Intending subscribers (one dollar per year) should apply to the editors at once.

SINCE the publication of our remarks in March relating to the coalition of pharmaceutical journals in this city and their alleged publication in the interests of the Standard Oil Company, we have been informed by Messrs. Root and Allison that no relations whatever exist between the Standard

Oil Company and the company owning *The Oil, Paint, and Drug Reporter*, *The Weekly Drug News* and *The Druggists Circular*. Mr. Allison has given us the history of his purchase of several of the publications referred to, some of which, on closer acquaintance, prove to have been more imposing in name than in the extent of their circulation, and Mr. Root has related the history of *The Weekly Drug News* and *Oil and Paint Review*, and the purchase of the *American Pharmacist*. The career of *The Oil, Paint, and Drug Reporter* as an "anti-standard" publication, and of *The Oil and Paint Review* and *Weekly Drug News*, as its independent rivals. Finally, the circumstances of the union of these with the *Druggists Circular* were told, so far as appeared needful, to show that no connection, as alleged, existed between the publishing firm and the Oil Company.

It would therefore seem that an injustice was done to our *confrères* in publishing a report alleging their subserviency, individually or collectively, to the Standard Oil Company, and in the inference that its interests, rather than those of the drug trade generally, were in future to be consulted by them.

Regarding the possible union in the future of the three journals into one, nothing, they say, resembling it is entertained, each having laid out for it a separate sphere, as announced when the business combination was first made.

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### Removal of a Quinine Factory to Italy.

UNDER date of March 21st, Messrs. Powers & Weightman, of Philadelphia, issue the following circular:

"For the information of our friends who are interested in the matter, we would state that during the rebuilding and reappointing of our quinia manufactory here we have made arrangements that no break of importance shall occur in the production of our article, by availing ourselves of facilities that have been offered us of making it in Milan, Italy.

"To this point we have already sent some of our stock of bark, which fortunately escaped the fire, and the remainder will follow immediately. All this bark had been carefully selected by ourselves.

"One of the members of our firm, Dr. John F. Weightman, who has during several year past had charge of this branch of the business, is already on his way to supervise the manufac ture in Milan, whence the product will be brought to our establishment here.

"All our arrangements have been carefully made with the view of continuing the high standard of our sulphate of quinia maintained for so many years past; so that users of it may feel the same confidence in our brand that it has so long enjoyed.

"During this temporary arrangement we shall be re-erecting the works that were burnt, and, in addition, will prepare a new building on the grounds belonging to our out-of-town laboratory, where a part of the quinia manufacture will be conducted, so that the risk of accident will be divided between two places.

"In the mean time, with our stock of sulphate quinia remaining, and prompt receipts of our Milan product, we do not expect any interruption of our ability to supply our article.

"With our new appointments for sulphate morphia about completed, we expect, when fairly under way, to have an increased out-turn.

"In our other preparations we do not think there will be any appreciable interruption to our supply for any length of time."

Dr. Weightman with his family sailed for Europe in the Werra on the 19th of March, and it is said that the first shipment of bark amounted to 3,000 bales. Owing to the absence of duty on sulphate of quinine and the low price of labor and chemicals abroad, Powers & Weightman will very likely, by this arrangement, be enabled to continue their quinine manufacture at greater advantage to themselves.

The Milan works, said to have been leased by them, are the property of Alexander Boehringer, who has for some time past been the largest quinine producer of the world, his works being located at Manheim in Baden, in Paris, and in Milan.

It has lately been said that these two firms produce more than one-half of the quinine now manufactured, the total output being between 4,000,000 and 5,000,000 ounces per year, and more than one-third of the whole is consumed in the United States.

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### The U. S. Pharmacopœia in Massachusetts.

THE *Boston Medical and Surgical Journal* of March 20th says that it is reported in the daily papers that a majority of the Legislative Committee on Public Health, apparently influenced by certain wholesale druggists of that city who have been prosecuted by the State Board of Health, Lunacy, and Charity for selling adulterated drugs, intend to report a bill amending the present adulteration act. They would make one of the several excellent commentaries, which have been published as private enterprises, the legal standard in Massachusetts for all the medicines mentioned therein, instead of the United States Pharmacopœia itself, upon which it is based. The editor goes on to show how irrational such a course would be, in view of the fact that such a standard is liable to frequent changes; establishes foreign standards in place of the single one adopted by the medical and pharmaceutical professions of this country, and, what is more to the point, establishes as a standard a work which in at least one instance cited (Tr. of Opium) furnishes no definite standard of strength whatever.

In conclusion, the editor of the *Journal* says:

"Out of such a large selection of standards, more or less indefinite, according to the various pharmacopœias —for these several foreign pharmacopœias would then become law in Massachusetts, besides many an unofficinal formula—it would become wellnigh useless to attempt any enforcement of the law.

"This is just the end which is sought for by those who have felt the disadvantage of the present more definite standard. Having rid themselves of this trouble, they are very willing that the rest of the act should remain unaffected, as it would have been rendered perfectly harmless against adulterations. No valid reason can be given for the desire to make the commentary the legal superior of that upon which it comments. Surely any private commentary upon a statute is not superior to the statute itself."

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THE subject above referred to was discussed in the Section for Clinical Medicine, Pathology, and Hygiene of the Suffolk District (Boston) Medical Society at a recent meeting, and it is a pleasure to notice that Ex-President Colcord, of the Amer. Pharm. Assoc., President Canning, Vice-President Bartlett, and Prof. G. F. H. Markoe, of the Massachusetts College of Pharmacy, and W. C. Durkee, Ph. G., were present by invitation, and contributed to the discussion in a manner that was well appreciated.

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### Druggists and Doctors.

WE have on several occasions suggested that pharmacists are greatly at fault in not making more use of their opportunities for discussing questions of mutual interest to both professions in medical societies and journals. To cite a recent instance: A committee of New York and Brooklyn pharmacists, of undoubted skill, has for many months been at work on a series of unofficinal formulas which are to be recommended to the physicians of the two cities for their adoption, to be used by them in prescribing, in place of the great variety of similar preparations emanating from as many different manufacturers. The completed work is now about to be published, but no step has been taken to enlist the interests or sympathy of the medical profession as a body, and, as a consequence, it must be some time before the existence of such a work can be generally appreciated by physicians.

It would, in our estimation, have been much wiser to have enlisted the co-operation of the representative medical societies at the outset, and, perhaps, to have requested the appointment of medical members of the committee. It is doubtless true that little aid could have reasonably been expected of them in the actual work of preparing formulas, but at least this would have accomplished one thing, and that is the one which must be aimed at, and the failure of which will defeat the object of the work, viz., the sympathy and co-operation of the prescriber. If doctors are to go on prescribing So-and-so's pills in preference to the ones made by his local pharmacist, what good will the work have accomplished?

As it is, the committee have prepared a work which will be for sale at a price which will limit its circulation to a few physicians who are specially interested, and who, as a rule, require very little reformation of habits in this direction. Would it not have been far better to have constructed, at first, a smaller number of formulas, paid for their publication out of a fund raised conjointly by doctors and druggists, and printed a sufficient number of copies to place one in the hands of every member of the two county medical societies and every registered pharmacist in the two cities? It would have been comparatively easy, with the aid of the medical members of the committee, to have secured such action on the part of these two great medical societies as would commend the formulas to the attention and confidence of their fellows.

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IN connection with the article on "Reduced Iron," on page 66, it will interest certain of our readers to know that, according to recent reports from Germany, Dr. Rundspaden, a manufacturing chemist at Hamelin, whose reduced iron enjoyed a high reputation for purity, has lately absconded, leaving numerous creditors.

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### Correction.

IN formula of Nepenthe in our last number, p. 53, read: Sherry ℥iv., instead of ℥i.

On p. 58, first column, line 44, strike out the word "not."

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**The Ohio Pharmacy Act**, we are informed by a telegram from Cincinnati, has been passed by the Legislature.

### Rapid Filtration.

I HAVE devised a more simple means for inducing rapid filtration in analytical work than any I have yet seen mentioned.

The filter is prepared, and supported at the point by a cone, as required by the suction methods, in a funnel, which it is best to have with its edges ground level, and held in any firm support.

The device is simply to have a glass plate about 6 inches in diameter and 1 inch thick, which has a ¼-inch thick soft rubber disc of the same size as the glass cemented to its surface. There is a hole through the centre of the glass and rubber plate. This heavy plate is large enough to cover any size funnel likely to be used, and will make a tight joint by its rubber side with the funnel, either through its own weight or if pressed down by the hand. Through its central hole air is forced in from a rubber tube connected with one of Fletcher's excellent foot-bellows, to any desired pressure. To prevent the air thus blown in from agitating too much the fluid contents of the filter, a square piece of very thin sheet-rubber, something larger than the hole, is fastened over it by its four corners, having pins passed slantingly through them into the rubber plate beneath it. This prevents the air from being blown straight down into the filter but makes it spread out sideways.

This method leaves free and easy access to both the filtrate and the filter by the simple lifting off of the plate from the funnel, is simple of applica tion, and not likely to be out of working order when wanted for use. The pressure is under perfect control.—B. F. DAVENPORT, State Analyst, Boston, in *Chem. News*, Feb. 1st.

### The Odorous Principle of Hyoscyamus.

ACCORDING to Gerrand, the strongly and disagreeably odorous principle of Hyoscyamus resides in a substance which has so far not been obtained entirely pure, but only in form of a bright-yellow, slimy, and semi-cystalline mass of an acid reaction, an acid and sharp taste, soluble in alcohol, ether, chloroform, and disulphide of carbon, and volatilizable by heat.—*Pharm. Journ.*

### Reissner's Vaccine Powder.

DR. O. HAGER (*Berl. Klin. Wochenschrift*) says that vaccination with Reissner's powder is the best of all vaccine methods. The technical difficulties in making this powder are only very small, and may very readily be surmounted. The pustules of calves, five days after vaccination, are nipped off at the base by pincers, and the part of the pustule on the pincers is scraped with a lancet as long as it yields a fluid lymph. In this manner is obtained a lymph which is very tough, and contains cells of the rete Malpighii, to which Hager gives particular weight. The scraped mass is spread on glass and placed immediately in a sulphuric acid exsiccator, in which it is left one or two days; afterwards the dry powder is ground in a mortar, and the mass thus prepared is kept in the exsiccator till it is used. Immediately before use it is moistened with water, glycerin, or a disinfectant. Hager observed that, with an addition of 4 per cent of carbolic acid or of 1 per cent of sublimate solution, the powder retained its efficacy. The great advantage of Reissner's powder is the ease with which it is prepared. Every doctor in the country can prepare his own supplies of lymph. The cost is also very small, as from one calf from 2,000 to 3,000 children can be vaccinated.—*Chem. and Drug.*

### Ammonio-Ferrous Sulphate as a Reagent for Nitric Acid.

AUSTEN and CHAMBERLAIN recommend the use of ammonio-ferrous sulphate, in place of the plain ferrous sulphate, in the well-known reaction for nitric acid, which may be performed in several ways, for instance, by adding to a strong solution of ferrous sulphate an equal volume of strong sulphuric acid, pouring a little of the cold mixture into a test-tube, and carefully pouring on top a little of the solution suspected to contain nitric acid. If any of the latter is present, a brownish or brownish-black zone will be produced at the point of contact of the two liquids.

If the ammonio-ferrous sulphate be used in these reactions, the mixture may be kept on hand without spoiling, and it yields equally sharp results. Should the double salt not be readily obtainable, the two salts, sulphate of ammonium and ferrous sulphate, are dissolved in water, in the proportion of their molecular weights, and the solution, mixed with two per cent of concentrated sulphuric acid. Otherwise, the reagent is prepared by dissolving twelve *gm.* of ammonio-ferrous sulphate in one hundred *cc.* of water, with two *cc.* of concentrated sulphuric acid.

Osborne's Meat-Juice Press.

THE difficulty attending the extraction of the juice from rarely-cooked meat often prevents its use when it might be of service in cases of feeble digestion. A common lemon squeezer is sometimes used for this purpose, but nothing has yet been found which accomplishes the work as easily and perfectly as the little apparatus invented by Mr. H. F. Osborne, of Newark, N. J., and illustrated above, since it combines the action of a screw press with that of a grinding mill. The bottom of the cup and the under surface of the follower are provided with grooved surfaces somewhat like the grinding surfaces of a coffee mill, and when a piece of broiled meat is placed between them and pressure made by means of the screw, a few movements of the handle to and fro quickly break up the fibres of the meat and the pressure of the screw rapidly exhausts its juices. During the coming season, when digestive disturbances among children are likely to be so frequent, these convenient appliances should find a ready sale.

**Solvent for Gum-Resins.**—A solution of 7½ per cent of caustic lime has been used for ammoniacum (1 in 4), myrrh (1 in 5), guaiacum (1 in 7), opium (1 in 10), aloes (1 in 15), and assafœtida (1 in 15). These solutions mix with water without precipitation.—*Pharm. Centralhalle.*

**Vehicle for Sodium Salicylate.**—J. Solis Cohen recommends equal parts of simple syrup and water, or of simple syrup and solution of citrate of ammonium, of the British Pharm., flavoring with oil of wintergreen.—*Med. and Surg. Rep.*

**Licorice Incompatible with Acids.**—The following prescription gave a black sediment:

| | |
|---|---|
| Extract of hysocyamus | 10 grains. |
| Sulphate of morphine | 2½ " |
| Muriate of ammonia | 3 drachms. |
| Glycerin, | |
| Syrup of squill, of each | 1½ ounces. |
| Fl. ext. of licorice, q. s. to make | 4 ounces. |

The precipitate probably consisted of glycyrrhizin thrown down by the acid of the syrup of squill, and its separation deprives the mixture of the sweetening property which belongs to this substance. Alkalies, which would redissolve the glycyrrhizin, might be used to neutralize the acidity of the syrup, if done with the consent of the prescriber.—*Drug. Circ.*

**Keeping Prussic Acid.**—A Detroit correspondent speaks of a vial which had for several years contained dilute hydrocyanic acid which had undergone no change in color. The vial had been covered to the lip with an opaque varnish, and the cork, which was inserted well down into the neck, still further aided in the exclusion of light.—*Ibid.*

**Syrup of Violets.**—The French Codex formula consists of:

| | |
|---|---|
| Violet petals (cultivated), fresh and cleaned | 1,000 parts |
| White sugar | 4,000 " |
| Distilled water | sufficient. |

Wash the petals with six times their weight of distilled water warmed to 45° C. (113° F.), and strain with light pressure, through cloth washed with distilled water. Transfer to a block-tin vessel and pour on enough boiling distilled water to make 3,000 parts by weight. After twelve hours strain with pressure, and obtain 2,120 parts by weight of infusion. Allow this to settle, decant into the same block-tin vessel, and dissolve the sugar in it by means of a water-bath. Strain through flannel.—*Ibid.*

### A New Chewing-Gum.

| | |
|---|---|
| Venice Turpentine | 100 parts. |
| American Thus | 75 " |
| Yellow Wax | 50 " |
| Bals. Tolu | 10 " |
| Bals. Peru | 5 " |

Melt together and add, in fine powder:

| | |
|---|---|
| Cinnamon (Chinese) | 30 parts. |
| Chocolate | 50 " |
| Red Sandal Wood | 10 " |
| Myrrh | 5 " |
| Galangal | 5 " |
| Ginger | 5 " |
| Cardamom | 2½ " |

(Parts by weight.) Mix and roll out, when cool enough, into sticks, or make into any suitable form.—*New Idea.*

**Preserving Steel from Rust.**—Professor Omstead, of Yale College, is said to recommend the following: Melt slowly together six or eight parts of lard with one of resin, and stir the mixture until it is cool. This will preserve bright steel surfaces if rubbed on them and they are clean and dry, but it will not arrest oxidation which has already begun. [For a number of years surgeons in the U. S. Navy have been required by the regulations of the Bureau of Medicine and Surgery to cover the polished steel of surgical instrument with a thin coating of mercurial ointment. This proves an efficient protection even on long voyages.—ED. AM. DRUGGIST.]

### Tin as a Contamination of Preserved Fruits and Vegetables.

UNGER and Bodländer have examined a number of cans of preserved fruits and vegetables, with a view of ascertaining the quantity of tin which had combined with the latter. The investigation was begun in consequence of a married couple who had eaten of preserved asparagus, being taken ill with symptoms of some metallic poisoning.

The authors first examined preserved asparagus, and found in one tin containing 378 gm. of solids and 140 gm. of liquid, 0.166 gm. of tin; in another box containing 325 gm. of solids and liquids, they found 0.041 gm. of metallic tin with traces of lead. The liquid of the last-named sample, however, after filtration, was found free from tin. Preserved peas were found to contain 0.003 gm. of tin (with traces of lead) in 425 gm. of the preserved mass.

The assay of tin in the liquid was performed in the following manner: The liquid was evaporated and the residue ignited, if necessary, with final addition of nitrate of ammonium. The ash was carefully mixed in a porcelain crucible with six times its weight of a mixture of equal parts of bicarbonate of sodium and sulphur, and heated until the whole was melted. The mass was then dissolved in water, filtered, the filtrate acidulated, stirred, and set aside until no more odor of hydrosulphuric acid was perceptible. The sulphide of tin was then filtered off, converted into oxide by ignition, and weighed.

It was found, as might have been anticipated, that the asparagus, etc., in contact with the sides of the can, contained the most tin. Since the tin could not be extracted from the solid vegetables either by boiling with water or by acetic acid, but only by means of at least a three-per-cent hydrochloric acid, it is probable that the tin was present as a stannous oxide or salt.

Preserved fruits were likewise examined, and it was found that strongly acid fruits had absorbed notable quantities of tin, while the liquid portion remained uncontaminated.

The authors found that the eating of such contaminated preserves is not usually followed by acute morbid symptoms; the chief result is a slight inflammatory or caustic action of the digestive tract. Nevertheless, a caustic effect is by no means impossible, and some portions of the metal are actually absorbed. It may be safely stated that preserves contaminated with tin, if eaten continuously, are liable to produce injurious effects.—*Pharm. Rundschau* (Leitmeritz.)

### Tannate of Mercury.

DR. S. LUSTGARTEN reports on the chemical and physical properties of tannate of mercury (mercurous tannate), prepared in the laboratory of Prof. E. Ludwig, and used by Prof. Kaposi in various syphilitic affections.

The new preparation appears in the form of a dark-green, odorless and tasteless powder, containing 50 per cent of mercury. It is not soluble without decomposition, is not materially affected by diluted hydrochloric acid, but easily so by even highly-diluted solutions of alkalies (ammonia, potassa), and of alkali carbonates, the effect of the reaction being that a magma consisting of very minute particles of mercury separates after a short time. These particles are so small that a large portion of them, when viewed under a microscope, is seen to exhibit the phenomenon of the so-called molecular movement. Whether this reduction process occurs also in the organism under the influence of the alkaline reaction of the intestinal juice, and whether mercury can thus be absorbed through the mucous membrane of the intestines in the same manner as it is absorbed when rubbed into the skin—these are questions which the reporter was not able, as yet, to answer. Nevertheless, a rapid introduction of mercury into the circulation could always be observed, it being always found in the urine twenty-four hours after having been administered.

The new preparation was given *internally* in doses of 0.1 gramme (1½ grains) two or three times per day. In spite of this relatively large dose, all disagreeable symptoms, so often accompanying the use of mercurials, were absent. On the other hand, the results obtained with ten cases of syphilis in various stages upon which it had been tried—among them difficult and obstinate relapsing forms, such as small papular, pustulous syphilides—were so rapid and favorable, that the new preparation may be safely placed by the side of the best mercurials so far known, including mercurial ointment.—*Zeitsch. d. Oesterr. Apoth. V.*, No. 5.

### The Preparation of Absolutely Pure Sulphate of Quinine.

IN connection with an article by Dr. de Vry, published in this journal elsewhere, and treating of Hesse's test, the author mentions the fact that recrystallization of commercial sulphate of quinine cannot remove altogether, though it may diminish, the accompanying cinchonidine. Even three recrystallizations were unable to accomplish this.

The most practical method of preparing absolutely pure sulphate of quinine is to start from the so-called bisulphate of quinine, which can indeed be obtained, in a chemically pure condition, from different quinine factories, according to Dr. Vry's experience. One part of this salt is dissolved in forty parts of hot water, and to the boiling solution enough solution of soda is added until very sensitive blue paper is just barely rendered faintly red. The pure, basic sulphate of quinine will then separate from the solution, upon slow cooling, in handsome, transparent needles.—*Nieuw Tijdschr. v. d. Pharm.*, Feb.

### Toxicological Notes.

THE following notes on certain poisons have been collected by Ad. Vomácka and published in the *Rundschau* (1883, No. 33):

*Opium.* In one case where all the usual remedies failed, the patient was saved by introducing 12 gm. (about 220 min.) of undiluted tincture of capsicum. In another case, very good results were obtained by a rectal injection of 4 gm. about 75 min.) each of tincture of capsicum and water of ammonia, in coffee.

*Chloral.* A hypodermic injection of strychnine has been recommended.

*Belladonna and Stramonium.* Inhalations of chloroform are reported effective.

*Strychnine.* Paraldehyde is recommended. This overcomes the toxic effects in doses which, by themselves, would be too small even to produce narcosis. There is no special antagonism between the two drugs.

*Iodine.* Use a solution of 1 part of hyposulphite of sodium in 75 parts of water. After the first danger is over, give starch and milk.

*Benzin and Nitrobenzol.* According to Pabst and Neumann, benzin acts like ether, chloroform, and still more like alcohol. Workmen who are exposed to vapors of benzin, are liable to become excited, intoxicated, partly demented, etc. The effect of nitrobenzol, if introduced into the organs of digestion or respiration, makes its appearance after some delay, perhaps after an hour, in form of general convulsions, cramps, and isolated contractions of certain muscles. Of 44 cases, 14 ended with death. Nitrobenzol alters the blood-corpuscles, which lose their form, while hæmoglobin is changed to hæmatin. Benzin acts upon the brain; nitrobenzol more upon the nervous centres.

*Aconite.* Baker has reported the case of 4 boys who chewed and swallowed small pieces of aconite root. In 15 minutes, all of them labored under acute symptoms of poisoning. When brought to the hospital, they were given an emetic of sulphate of zinc and wine of ipecac; and after the stomach was evacuated, cognac and coffee was administered. Next day the symptoms of poisoning had disappeared in three of the patients, one of them only suffering from intense headache.

### Overcoming Antipathy towards Chloroform.

SOME patients have a particular antipathy against the odor of chloroform, and begin to struggle when about to be placed under its influence. To overcome it, Prof. Nussbaum, of Munich, recommends to put 10 or 12 drops of oil of cloves upon the towel, or other apparatus used in administering the chloroform.—*Deutsch. Med. Zeit.*

### Extract of Wheat Flour.*

THE dried extract of wheat flour, which is known as Gehe's, is prepared in the following manner:

| | |
|---|---|
| Wheat Flour | 100 parts. |
| Malt, ground | 100 " |
| Pure Bicarbonate of Potassium | 2.5 " |
| Water, a sufficient quantity. | |

Mix the wheat flour with 200 parts of water to a paste, then add the malt and 800 parts of water, and heat to a temperature of 65° C. (149° F.) under constant stirring during two and a half to three hours until a sample, in a test-tube, when covered with a layer of tincture of iodine, no longer shows the presence of starch. Then add the bicarbonate of potassium, previously dissolved in water, heat the whole to 100° C. (212° F.), and keep it at a full boil for about then minutes. Then allow to settle, siphon off the clear liquid, drain the residue on a strainer, and evaporate the liquid in a vacuum apparatus to a thick extract. Finally evaporate the latter in small portions to dryness.

The product is a light yellowish to reddish-brown, somewhat hygroscopic lamellar powder, readily soluble in water to a nearly clear liquid. It has an agreeable, sweet taste and is rich in protein bodies.

The directions for making this valuable preparation are, in the main, the same which were published by Liebig, about twenty years ago, for making his "infant's soup." But, while the latter was in liquid form, quickly becoming acid and not keeping over twenty-four hours, and moreover its preparation on a small scale was not always successful, the process of Gehe & Co., of Dresden, furnishes a preparation of uniform quality and of almost unlimited keeping qualities, if properly preserved. It differs from the so-called "infants' flour (kindermehl)," which is much in use, by not containing either milk, eggs, sugar, or undissolved starch.

The same firm also furnishes a pulverulent extract of malt of a whitish, and a pulverulent extract of legum-

* Extract from the following *important work*, containing descriptions, definitions, working formulas, methods of assaying and testing, etc., for all important medicinal crude substances, chemicals and pharmaceuticals not officinal in the new German Pharmacopœia. The title is: *Supplement zu der zweiten Ausgabe der Pharmacopœia Germanica. Für Apotheker, Aerzte, Medicinal-Beamte, Drogisten, von* DR. B. HIRSCH, *Apotheker*, 8vo. Berlin, 1883.

inous seeds, of a yellowish color, both prepared by a process similar to the above. The chief constituents of these three dietary substances, so valuable both for children and convalescents, are the following (according to E. Geissler).

| Constituents. | Extract of Wheat Flour. | Malt. | Leguminous Seeds. |
|---|---|---|---|
| Carbohydrates, soluble | 86.50* | 88.50 | 77.00 |
| Among them sugar. | 25.06 | 32.02 | 28.08 |
| " " dextrin | 60.05 | 56.00 | 47.05 |
| Carbohydrates, insoluble | 0.61 | 0.42 | 2.00 |
| Protein bodies | 6.53 | 7.02 | 13.45 |
| Salts | 2.10 | 1.64 | 5.30 |
| Phosphoric acid | 0.81 | 0.55 | 0.88 |
| Fats | 0.20 | 0.22 | 0.30 |
| Water | 4.06 | 2.02 | 1.95 |

### Eau de Cologne.*

From Dr. Hirsch's new Supplement to the German Pharmacopœia (see page 73), we quote the following passage:

Good Eau de Cologne (Spiritus odoratus) should have an agreeable, refreshing and *lasting* odor in which no single constituent should be prominently perceptible. Nevertheless, after the other aromatic constituents have passed off, the presence of good oil of neroli usually remains, which is not objectionable. After the oils are dissolved, the alcoholic solution should be *diluted* so far, that a further small addition of water will quickly cause opalescence. In this way the real perfume comes out more prominently and is less obscured by the alcohol. The dilution may be effected by *water* to incipient opalescence, or in place of it, a little *fresh milk* may be used. The latter incorporates a small amount of fat into the liquid, and the presence of the fat causes the odorous substances to be less rapidly volatilized than would otherwise be the case. Eau de Cologne should also be entirely or, at least, nearly colorless, for which reason many subject it to distillation. This has, however, the disadvantage that a considerable portion of the oils fails to pass over, and is therefore wasted. A principal condition to obtain a good preparation is, that the oils and the alcohol must be the very best that can be obtained. The following is a synopsis of some formulæ:

| Constituents. | Russ. Pharm. | U. S. Pharm. | Schneider. | Wilms. | Hirsch. |
|---|---|---|---|---|---|
| Oil of Bergamot | 18 | 16 | 90 | 15 | 18 |
| " Cloves | 1 | | 1.5 | | 1 |
| " Cinnamon | 1 | | 1.2 | | 1 |
| " Orange | 2 | | | | 2 |
| " Lemon | 4 | 8 | 30 | 8 | 2 |
| " Neroli | 2 | 4 | | 4 | 4 |
| " Lavender | 4 | 4 | 15 | 4 | 2 |
| " Rosemary | 2 | 8 | 1.5 | 8 | 2 |
| " Thyme | 2 | | 0.8 | | 2 |
| Tinct. of Musk | 1 | | 3 | | 1 |
| Alcohol | 2400 | 800 | 3780 | 1000 | 1250 |
| Acetic Ether | | 2 | | | |
| Dist. Water | | 158 | | | |
| Orange Flower W. | | | 180 | | |
| Rose Water | | | 180 | | |
| Fresh milk | | | | | 140 |
| Total | 2437 | 1000 | * | 1039 | 143 |

*Macerate eight days, then distil off 4,000 parts.

### Analysis of Condensed Milk.

It will be of interest to many of our readers, who handle or have to examine condensed milk, to be able to compare the results of an analysis made by Professor Fresenius with those made by chemists in this country and published in this journal some years ago.

Professor Fresenius found a sample of Swiss unsweetened condensed milk to contain the following constituents:

| | |
|---|---|
| Butter | 10.87 |
| Albumen | 1.27 |
| Casein | 10.65 |
| Milk sugar | 14.26 |
| Inorganic substances | 2.36 |
| Total solids | 39.41 |
| Water | 60.59 |
| | 100.00 |

According to report, the factory where this milk is condensed, is very particular in not allowing the milk to be handled or touched after it is received. All the operations are conducted in pans thoroughly scoured with sand and hot water, and afterwards submitted to the action of high-pressure steam. There is no addition of any preservative except an extremely small proportion of borax, amounting to perhaps 0.2 grain per gallon of original milk, the keeping properties of the condensed milk being mainly dependent upon three things:

1. The extreme cleanliness observed in its manufacture.

2. The heating of the milk to a very considerable temperature *after* condensation.

3. The careful packing and soldering in air-tight tin cans.

The inorganic constituents were found by Professor Fresenius to be the following:

| | In 2.36 parts. | In 100 parts. |
|---|---|---|
| Borax | 0.630 | 26.69 |
| Soda | 0.256 | 10.85 |
| Lime | 0.543 | 23.01 |
| Magnesia | 0.057 | 2.41 |
| Oxide of iron | traces. | traces. |
| Phosphoric acid | 0.669 | 28.35 |
| Sulphuric acid | 0.049 | 2.08 |
| Chlorine | 0.202 | 8.56 |
| | 2.406 | 101.95 |
| Less oxygen | 0.046 | 1.95 |
| | 2.36 | 100. |

—*The Analyst*, 1883, 171.

### Dundaké and Dundakine.

Dundaké (doundaké) is the name of a tree found at the west coast of Africa. Its bark, which is employed by the natives of the Rio Nunez as a febrifuge, has an orange-red color, a strongly bitter taste, and is formed of a series of layers which are easily separated from each other. Venturini has obtained from it a substance supposed by him to be identical with salicin, and Engel has suspected that it contains an alkaloid.

Rochefontaine, Féris, and Marcus have lately studied the physiological effects of the bark.

They have extracted from it a yellowish substance, crystallizing in rhomboeders, of a bitter taste, soluble in water and in alcohol, and of an alkaline reaction. They consider it an alkaloid, and have named it dundakine (doundakine).

The physiological effects show that the bark contains a toxic substance producing a condition resembling catalepsy. The most prominent feature of the intoxication is the retardation and arrest of respiration, even while the heart-beats continue to be regular; finally the heart becomes gradually arrested, and death supervenes.

The arrow-poison of the natives of the Rio Nunez appears to contain the active principle of dundake bark.—*Répert. de Pharm.*, January, 1884.

### Cresotic or Homosalicylic Acid.

This substance, which is obtained from kresol-sodium in the same manner as salicylic acid is obtained from phenol-sodium (by heating in a current of carbonic acid gas), has been found to be as powerful an antiseptic as salicylic acid, and even to exceed both the latter and also quinine in its power of lowering, and keeping low, febrile temperature. This effect is said to be obtainable by doses of 5 to 8 grammes (75 to 120 grains) of the sodium salt of the acid (natrium cresotinicum, cresotate of sodium, homosalicylate of sodium). The experiments so far conducted with this substance, however, are not sufficient in number, nor has the salt been always available of sufficient purity to form a conclusive judgment.—*Pharm. Zeit.*

### Phenolboric Acid.

This is an antiseptic recently brought into use. It appears in form of crystalline needle-groups of a feebly acid character, which are but little soluble in cold, but easily so in hot water, alcohol, and ether. It is said to possess even stronger antiseptic properties than phenol itself. [According to our experience, this claim is usually made for each new antiseptic introduced.—Ed. A. D.] It has a mildly-aromatic taste, an agreeable, marjoram-like odor, and, even when taken undiluted in form of powder, causes neither burning, nor caustic or irritating effects on the mucous membrane. At the same time, doses of 1 gramme cause ringing in the ears, vertigo, slight headache, and inclination to sleep. It also lowers the temperature of the body in febrile affections.—*Pharm. Zeit.*

### Morgan's Reduced Iron.

This kind of reduced iron is prepared in the following manner: 259 gm. of ferrocyanide of potassium are dried until all water of crystallization is expelled, then finely powdered and gradually mixed with 125 gm. of washed and powdered ferric oxide and 90 gm. of pure, dried carbonate of sodium. The mixture is thrown, in small quantities at a time, into a crucible heated above a dull-red heat, and the heat finally continued until no more effervescence is observed. The mass is allowed to cool in the crucible, then taken out, powdered, and put into a large vessel, where it is washed with distilled water until the washings are no longer rendered cloudy by nitrate of silver, that is, until no more cyanide is present. The powder is collected upon a filter and dried as rapidly as possible in order to prevent a protracted contact with the air. This form of reduced iron, if kept in well-closed vessels, keeps for a long time unaltered.

It is a fine, dark-gray powder, completely soluble in hydrochloric acid with strong effervescence.—*Farm. Ital.* and *Pharm. Post.*

### Mouth-Washes.

The *British Journal of Dental Science* recommends the following mouth-washes for the use of sick persons whose teeth and gums often become unhealthy through insufficient nourishment, medicines, or want of cleansing:—One part permanganate of potash to 100 to 150 parts of water, to which can can be added some camphor, as the metallic taste is disagreeable; or, a solution of boracic acid one in 20 or 30; or the following: tinct. of benzoin, 10 parts; tannic acid, 20 parts; alcohol, 30 parts; oil of peppermint, a sufficiency. Put 10 to 20 drops in a glass of water.

**Adulterated Oil of Cassia.**—William Saunders, of London, Canada, has lately found in market samples containing thirty to fifty per cent of a mixture consisting of about four parts of castor oil to one of alcohol.—*Pharm. Record.*

### The Young Leaves of the Lime.

ACCORDING to a correspondent of the *Tropical Agriculturalist* of Ceylon, these leaves have a pleasant, sweet, mucilaginous taste, if eaten raw or boiled as a vegetable, or used as a salad, and he adds that he and his family have so used them for years.—*Pharm. Jour.*

### Dry Sulphuric Acid.

VORSTER GRUENBERG, a German chemist, has suggested that, to facilitate transportation, the infusorial earth called *kieselguhr* used for the absorption of nitroglycerin may be similarly used with sulphuric acid, of which it will take up three times its own weight. In this condition, it may safely be transported in containers of wood or iron lined with lead. For many purposes it can be used in this form, and, after the removal of the acid, the *kieselguhr* may be washed, dried, and used again. It imparts no impurity to the acid.—*Pharm. Jour. and Trans.*

### A Root- and Herb-Chopping Apparatus.

IN a recent number of the *Pharmaceutische Handelsblatt* (No. 3) an apparatus for chopping roots and herbs is described, which may be of interest to some of our readers, although we suspect that most of them would prefer to use a mechanical chopper rather than to expend a considerable amount of elbow-grease.

The chopping machine consists of a iron box into which a chopping board is laid, and upon this the articles to be comminuted. The chopping knives are fastened into the face of a holder with a long, hollow handle, which may be made more or less heavy by filling with sand or lead, according to the strength of the user. The knives can be easily detached, for grinding. The apparatus is made and sold by A. Zemsch, of Wiesbaden.

### A New Reagent for Nitric Acid.

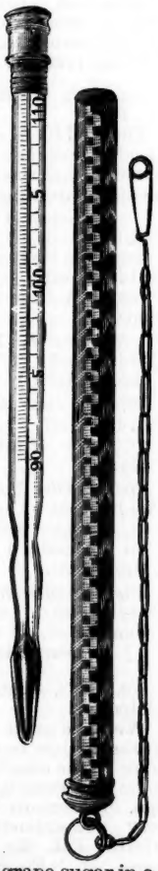
IF a liquid holding in solution nitrates is mixed with a few drops of paratoluidine sulphate, and superstratified with sulphuric acid, there appears at the boundary of the two liquids an intense red coloration, which passes into a dark yellow only after a considerable time. Crude aniline may be used instead of pure paratoluidine. The red coloration can be recognized in fluids containing $\frac{1}{3300}$ nitric acid. The reaction is less sensitive than that obtained with brucine and diphenylamine, but it has the advantage of producing a different color (blue) with chloric, bromic, iodic, chromic, and permanganic acids. It can also be used for distinguishing nitric from nitrous acid, since it produces with the latter a yellow coloration which gradually passes into red.—A. LONGI, in *Gaz. Chim.*

### Removal of Silver Stains from Marble.

IT will be remembered that the magnificent marble statue of Liebig, erected in Munich, was wantonly bespattered during one night of last fall with a liquid which left innumerable brown and black spots and streaks upon it. All efforts to find out the perpetrator of the outrage remained in vain. At first it was supposed that the statue was permanently ruined, but a commission was subsequently appointed, consisting of Professors M. von Pettenkofer, Ad. Baeyer, and Clem. Zimmermann, for the purpose of examining the stains and report on some method for their removal. These gentlemen succeeded in ascertaining the nature of the stains, which turned out to be due to nitrate of silver and permanganate of potassium. And it was not long before they discovered a method by means of which the stains could be completely removed. This consisted in converting the metal in the stains into a sulphide and removing this afterwards by cyanide of potassium. Both recently prepared as well as dried sulphide of silver is easily dissolved by the cyanide; sulphide of manganese, however, requires a considerable time, but is also completely dissolved.

The stains were first coated with a magma made from ground porcelain-clay and sulphide of ammonium, which was renewed once after twenty-four hours. After forty-eight hours this was removed, the spots washed with water, and then a magma applied which was composed of the same clay mixed with concentrated solution of cyanide of potassium. This was several times removed, and finally the whole stain disappeared. In some cases the applications had to be several times repeated. But finally, on December 13th (about twenty-three days after beginning the work), the statue appeared again in its original spotless beauty.

### WEIS' SAFETY ATTACHMENT FOR THERMOMETERS.



THE frequency with which clinical thermometers are accidentally broken is a subject for constant complaint on the part of physicians. Not long since a series of letters relating to it was published in the *Medical Record*, and many plans were suggested for avoiding such losses. One of the simplest and at the same time most attractive appliances to accomplish this end is the safety-case made by Albert A. Weis, of 80 Nassau Street, consisting of a gilt case and chain with a safety-pin for attachment to the vest. The thermometer is cemented to a screw-cap which secures it in the case when it is not in use. The whole thing is attractive in appearance and should find a ready sale among practising physicians.

### Antibacterid.

THIS is an antiseptic patented in Germany by Aschmann. It is prepared by dissolving 338 gms. of borax and 198 gms. of grape sugar in a little water as possible, adding 124 gm. of boric acid, and evaporating until the mass congeals on cooling.

A similar preparation, introduced some time ago, is glacialin (see NEW REM., 1883, 25).

**Gum Kauri.**—Intelligence has been received from New Caledonia that the French Government recently granted to Mr. Adolphus Oppenheimer, of Alkland, the right and monopoly for ten years to dig for and export kauri gum from New Caledonia, where he had discovered two extensive gum fields, yielding excellent hard kauri; also several rich chrome and cobalt mines, and obtained concessions for working the same.

**Labelling Stock Bottles.**—A correspondent recommends the following plan of marking stock bottles, as for instance, in the case of tincture of capsicum:

U. S. P. 1880.
TINCT. CAPSICI
W. B. 20 oz. av.
W. P. 25 " "
W. T. 45 " "

W. B. signifies weight of bottle; W. P., weight of percolate, and W. T., total weight. Once done, it never requires repetition, so long as the bottle lasts.

**Green Ink.**—Two ounces copper acetate may be boiled with 1 ounce of potassium bitartrate in 8 ounces of water, until the solution is reduced to one-half of its original bulk. To be filtered through cloth.

**Treatment of Warts.**—Two French doctors have stated that they have cured warts by the internal administration of twelve-grain doses of calcined magnesia. They cannot explain the action of the medicine.

**Incense.**—The *Chemist and Druggist* states that the following was the formula known to be used in a large Roman Catholic church: Benzoin and storax, of each, 4 oz.; labdanum and myrrh, of each, 6 oz.; cascarilla, 3 oz.; oil of cinnamon, 8 minims; oils of lavender and bergamot, of each, 20 minims; oil of cloves, 10 minims; mix, and pass through a coarse sieve.

**Oxyline** is the name adopted by the holder of patent 289,100, for a "substitute" for cacao butter. It consists, according to the season of the year, of varying proportions of oleomargarine stock, oleomargarine stearine, and stearine derived from vegetable fats or oils. The inventor says that he has been manufacturing this compound for the use of confectioners for nearly ten years, and that it is used extensively in place of butter of cacao derived from chocolate.

### Solubility of Benzoate of Ammonium.

Neutral benzoate of ammonium is said to be soluble in 5 times its weight of water, and 28 times its weight of alcohol, at 15° C. (59° F.). Boiling water dissolves almost 80%, and boiling alcohol 13% of its weight of the *neutral* salt. The *acid* salt is reported to be much less soluble. When by keeping its ammonia has escaped and the salt has become acid, carefully saturate with ammonia.

### To Render Dress Materials Uninflammable.

TUNGSTATE of soda has been the material most frequently employed to render light fabrics uninflammable; it fulfils the purpose admirably, but its high cost has been an objection to its use. Patera's formulæ have stood successfully frequent trials of their efficacy. One of these preparations is made by dissolving 3 parts by weight of biborate of soda, and 2¼ parts of sulphate of magnesia, in 20 parts of water. Fabrics soaked in this solution become coated with a borate of magnesia, which is insoluble in hot or cold water, and is a good resistant of fire. The other preparation is a mixture of sulphate of ammonia with sulphate of lime, or gypsum, in proportions of 1 part of sulphate of ammonia with 2 parts of gypsum. The gypsum is said to form with the ammonium a double sulphate which has not the disagreeable properties of the ammonia-salt. The action of this preparation seems to be twofold—first, in coating the fibres of the material to be protected, and also in the production, when the material is brought to a red heat, of volatile ammonia, which tends to smother flame.—*Br. Med. Jour.*

## QUERIES & ANSWERS.

*Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.*

*When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.*

No. 1,258.—**Aconite Species** (Mat. Med.).

Whether the aconite leaves and root of commerce are all collected from *Aconitum Napellus*, or whether other species are occasionally made to contribute toward the stock, is a question which has occupied the attention of several investigators. It is probable that at least most of the aconite root at present used is really obtained from *Napellus;* as regards the herb, there is much more chance for admixture.

The first one who used aconite as a remedy and carefully observed its therapeutic effects was Dr. Stoerk, of Vienna (about 1762); it is, however, pretty certain that the species he experimented with was *Aconitum neomontanum*. In the *Berlinisches Jahrbuch für die Pharmacie*, f. 1796 (16mo, Berlin, 1796), p. 129, Prof. Willdenow makes the following remarks on this subject, which will even now be of interest, and which we translate here, as the original is not easily accessible:

"Various botanists have disputed over the question whether the aconite used by Stoerk was *A. Napellus* or *A. Cammarum*. I myself believe that there is but little therapeutic difference between all the species of A. which have blue flowers. This much I know for certain, that neither about Berlin nor in many other localities in Germany is there any *A. Napellus* to be found growing, nor any *A. Cammarum* even in gardens. In the latter *A. neomontanum* is held for *A. Napellus*, and *A. tauricum* for *A. Cammarum*. Both of these species have been used with good effect in lieu of *A. Napellus*. The latter is but seldom met with in Germany [It is much more common at present.—ED. A. D.], being confined to the high mountains of Switzerland and Southern Europe, and also growing in Sweden. Since the other species of A. may replace the *Napellus* without detriment, and apothecaries are everywhere required to keep the herb in stock, it would be unjust to insist on the employment of the *Napellus* exclusively, since the difference can scarcely be detected by any one not a good botanist. Besides, it should be stated that Stoerck's aconite, as well as that which Jacquin considered to be the *Napellus*, are in reality *A. neomontanum*."

No. 1,259.—**Ethereal Tincture of Iodine, Magendie's** (Dr. & Ph.).

This is a solution of 4 grains of iodine in 1 fluidrachm of ether, which was recommended by Magendie as a remedy in scrofulous and neuralgic affections, in doses of 4 to 10 drops several times daily.

No. 1,260.—**Dyeing of Billiard-Balls** (P.).

A recently-published (*Pharm. Zeit.*) formula is as follows:

Place the ball for one minute in water, so that it is covered by the latter. The water should have first been mixed with 10 drops of nitric acid. It is then taken out, washed, dipped for one minute into a hot decoction of cochineal, then washed with water and dried. The decoction of cochineal is prepared by boiling 5 gm. (75 grains) of ground cochineal in 500 *cc.* (17 fl. ozs.) of water, with addition of 0.5 gm. (7½ grains) of stannous chloride (protochloride of tin), in a copper vessel. If the color is too light, use 10 gm. of cochineal and 1 gm. of the tin-salt, make a decoction, and dye the ball as before.

According to another statement, the ball should be placed for 10 to 20 minutes into diluted nitric acid (1 in 32), then well washed, and treated for 10 to 20 minutes with a solution of stannous chloride (1 in 200). Next it is placed for 10 minutes into a boiling solution of carmine (1 in 200), to which a little ammonia has been added. The addition of tartaric acid toward the end of the boiling, produces a scarlet tint.

When cold, the ball should be rubbed with a little linseed oil.

No. 1,261.—**Camphor-Ice** (Y.)

Try the following:

| | |
|---|---|
| Almond Oil, exp. | 16 ozs. |
| Rose-Water | 16 " |
| White Wax | 1 oz. |
| Spermaceti | 1 " |
| Camphor | 2 ozs. |
| Oil of Rosemary | ½ oz. |

Melt together at a moderate heat the oil, wax, and spermaceti, and dissolve the camphor in the mixture. Then gradually add the rose-water, stirring briskly and constantly until the mixture is cool, and then continue the stirring until it has become uniformly soft and creamy.

No. 1,262.—**Cod-Liver Oil Mixtures** (V. E. S.).

The cod-liver oil mixtures of the London hospitals, which are those we presume you refer to in your communication, are thus given by Squire:

*Mistura Olei Morrhuæ.*

Cod-liver oil 1 ℥, lime-water 1 ℥; one dose (St. Mary's).

Cod-liver oil ½ ℥, comp. tinct. of gentian 5 ♏, lime-water to 1 ℥ (University).

*Mistura Olei Morrhuæ Amara.*

Cod-liver oil 1 ℥, Tr. of Calumba 15 ♏, lime-water 1 ℥ (St. Mary's).

*Mistura Olei Morrhuæ cum Ferro.*

Cod-liver oil 1 ℥, carbonate potass. ¼ gr., wine of iron 1 ℥; dose 2 ℥ (St. Mary's).

*Mistura Olei Morrhuæ cum Potassa.*

Cod-liver oil 6 ℥, solution of potassa 40 ♏, stronger water of ammonia 2 ♏, oil of cassia 1 ♏, syrup 2 ℥ (consumption).

*Mistura Olei Morrhuæ Præparata.*

Cod-liver oil 6 ℥, stronger water of ammonia 2 ♏, oil of cassia 1 ♏, syrup 2 ℥ (consumption).

No. 1,263.—**Patent Preserving Salt** (Altoona).

We have made inquiries in reference to the article you mention, and have come to the conclusion that it is likely to be a substance patented, some years ago, in Germany by the chemical factory "Eisenbuettel" in Brunswick (Germ. Pat. No. 13,545), under the name of "Eisenbuetteler Conserve-Salz" (Eisenbuetteler Preserving Salt). Dr. Hager, in his *Praxis*, speeks very favorably of this, and even recommends pharmacists to keep it in stock and to sell it. He says:

"The chemical factory Eisenbuettel in Brunswick furnishes this salt in elegant tin-boxes, with double cover. The lower or inner cover is perforated like a sieve, so that the meat or other substance to be preserved may be uniformly sprinkled by the salt, which is in form of a powder. Its constituents are phosphate and chloride of sodium, nitrate and sulphate of potassium, boric acid, etc. It is used by uniformly sprinkling with it all of the surface, as well as any interior cavities of the meat. For two pounds of the latter, about four to twelve gm. (one-eighth to three-eighths oz.), or one to three teaspoonfuls are sufficient. Before use, the meat is to be washed, which is easily done, as the powder is quite soluble. Milk may be preserved unchanged by adding one gm. (fifteen grs.) to one litre (one quart). Further information may be obtained from the firm direct.

No. 1,264.—**Preparation of Butyric Ether** (F. E.).

Butyric ether, which is used in the preparation of several artificial flavoring extracts, can probably be purchased at a lower figure than it would cost to make it, per pound, on the small scale. Still, if you wish to make it yourself, we will give you a few formulæ from our files. By the way, the commercial butyric ether, sold for flavoring, is usually a mixture of various ethers, chiefly butyric. It depends greatly upon the process by which it is made, and also on the use to which it is to be put.

1. *From Butyric Acid.*—Mix slowly 4 parts of butyric acid, 4 parts of alcohol, and 2 parts of concentrated sulphuric acid. The butyric ether separates as an oily layer, which is removed by a pipette, washed with water, and mixed with a little chalk to neutralize free acid. It is then digested with chloride of calcium and distilled. If wanted quite pure, this must be repeated. When diluted, the product has a pleasant, pine-apple like odor.

2. *From Butter-Soap.*—This is prepared by mixing in a retort 10 parts of finely cut butter-soap, 5 parts of 90% alcohol, heating until solution is effected, then adding a mixture of 4 parts of alcohol, and 10 of sulphuric acid, and distilling, first with a very gentle heat. The product is purified as in No. 1. It is very aromatic, different from No. 1, and contains other ethers besides butyric.

3. *From St. John's Bread.*—St. John's bread (Ceratonia Siliqua) contains butyric acid ready formed, and butyric ether is sometimes prepared from it by subjecting it to fermentation and afterwards distilling the mass. Yet the method is circumstantial, and only available where the crude material can be had at a very low price.

No. 1,265.—**Non-Gumming Oil** (Ultra).

One of the best non-gumming oils, suitable for watches, rifles, and fine machinery in general, is that obtained from the jaw of the porpoise (Porpoise Jaw Oil), which may be occasionally had in moderate quantites, in some of the New England fishing towns. Other oils, such as that extracted from the wings of sea-gulls, etc., etc., have also been highly extolled, but the supply could never become equal to the demand.

A very good machine oil is said to be prepared in the following manner:

| | |
|---|---|
| Caballine Oil | 6 parts. |
| Pure Olive Oil | 6 " |
| White Rosin Oil | 10 " |
| Purified Petroleum | 4 " |

Caballine oil is obtained from the neck of the horse. The olive oil must be winter strained. The White Rosin Oil (called in Germany Cod-öl) is prepared from crude, heavy rosin oil, by saponification and distillation. It must be as clear and colorless as water. The above mixture of oils is much used for fine machines, clocks, telegraph-instruments, etc., etc.

In general, all oils which are extracted from bones possess the property of retaining their fluidity even when exposed to cold. There seems to be, however, some difference in this respect, between animals living in cold climates and those accustomed to heat inasmuch as the oil extracted from the bones of the former appears to bear a much greater degree of cold than the latter. We should, therefore, suppose that the oil extracted from the bones

of the seal, sea-lion, etc., which could be obtained in considerable quantity, would form an excellent article.

No. 1,266.—**Eosin** (Shoshone).

This important and handsome red coloring matter was discovered by Caro in 1873, and marks the beginning of a new era in the aniline color industry. At the time when it was first put on the market, its manufacture was kept secret, because the patent-laws then in force were defective. The ingenuity of experts on this field of organic chemistry (Gnehm, and A. W. Hofmann) soon found out the mystery.

In a former volume of this journal (NEW REM., 1880, 269) we explained the chemical constitution of resorcin. By referring to this article, it will be seen that resorcin is a derivative of benzol ($C_6H_6$), in which the two hydrogens in the meta-position (Nos. 1 and 3) are replaced by hydroxyl.[1] Next it may be stated that another derivative of benzol, discovered in 1836 by Laurent, but not fully understood until long afterwards, is phtalic acid. This is, however, not manufactured by starting from benzol, but from naphthaline. It may be regarded as benzol in which the two hydrogens in the ortho-position (Nos. 1 and 2) are replaced by carboxyl (COOH or $CO_2H$).[2] Phtalic acid may be converted by heating into phtalic anhydride, water being eliminated; see Note 3, where it will be seen that the two hydrogens and one oxygen of the 2 carboxyls have dropped out.

By heating resorcin and phtalic anhydride together at a temperature of 200° C., a new substance, *fluorescein*, is produced, and 2 molecules of water are eliminated.

$$\underset{\text{resorcin}}{2(C_6H_4H_2O_2)} + \underset{\text{phtalic anhydride}}{C_6H_4CO.CO} = \underset{\text{fluorescein}}{C_{20}H_{12}O_5} + \underset{\text{water}}{2H_2O}$$

To explain the constitution assigned to fluorescein would lead here too far. We will only add that this body has the property of imparting a magnificent greenish-yellow fluorescence to water containing an alkali.

Finally, by treating fluorescein with bromine, 4 atoms of hydrogen are replaced by bromine, and eosin ($C_{20}H_8Br_4O_5$) is produced.

One part of fluorescein is stirred in about 8 parts of alcohol and gradually mixed with 1.1 part of bromine. To the mixture another 1.1 part of bromine is gradually added, whereby the new substance, *tetra-bromfluorescein*, or commercially called *eosine*, is separated as a crystalline precipitate which is washed first with alcohol and then with water, until the washings cease to be acid.

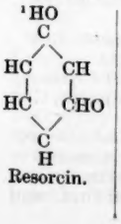
Eosin is a bibasic acid, the alkali salts of which are soluble in water. The water-soluble eosin of the market is usually the potassium, sometimes the sodium salt, and appears as a reddish-brown powder of slight metallic luster.

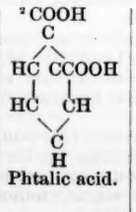
No. 1,267.—**Eosin Ink** (Shoshone).

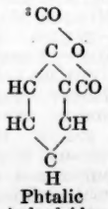
To make a good, quick-drying red ink from eosin, take—

| | |
|---|---|
| Eosin (best, water-soluble) | 120 grains. |
| Alcohol | 2 fl. oz. |
| Mucilage | 1 fl. oz. |
| Water, enough to make | 16 fl. oz. |

Dissolve the eosin in about 12 fluid-ounces of water, a small portion of this being poured, hot, upon upon the eosine contained in a bottle. Next add the alcohol, and shake; finally, add the mucilage and enough water to make 1 pint.

[1] 
Resorcin.

[2] 
Phtalic acid.

[3] 
Phtalic Anhydride.

No. 1,268.—**Hyosyomine and Hyoscine** (X.).

We have have recently had occasion to read a letter from a physician in which he complains of having failed to obtain results with doses of hyoscyamine as large as one-fourth grain. Since this matter is of some importance, and quite a number of our readers are interested in it, we will briefly state here our experience.

Up to about three or four years ago, the hyoscyamine (or sulphate of hyoscyamine) of the market, which was made by Merck, Schuchardt, Trommsdorff, and a few other German houses, was in form of a brown, extract-like mass. It was of very variable and uncertain composition, and, although the dose was occasionally stated to be not over about one-twenty-fourth of a grain, yet it could generally be given in doses of one-eighth to one-half grain without producing dangerous symptoms. After Prof. Ladenburg, of Kiel, had undertaken the chemical study of the solanaceous alkaloids, he found, in the course of time, that hyoscyamus contained at least two alkaloids, one of which is hyoscyamine and is crystallizable, while the other remained in the mother-water left after the crystallization of the former, and was, at least by itself and as then known, uncrystallizable. This latter alkaloid he named *hyoscine*. It has the same ultimate constitution as hyoscyamine, but is not identical (at least chemically) with the latter.

When he had succeeded in isolating the pure crystallized hyoscyamine, which succeeded only by converting it first into the gold salt and then again separating it from the latter, the pure alkaloid came in use in medicine. In the experience of physicians in the public hospitals of New York, its use was, however, found to be accompanied by varying results, which could finally be ascribed partly to its rather difficult solubility, and the ease with which undissolved portions of the minute quantity employed each time could be lost or overlooked when making a hypodermic solution. The sulphate of the pure alkaloid was next tried, but here another difficulty presented itself. Namely, quite a quantity of the white *alkaloid* hyoscyamine happened to be put on the market labelled "Sulphate of Hyoscyamine" which, on examination, turned out not to contain any sulphuric acid at all, but to be merely the alkaloid itself. How this blunder could have arisen we fail to understand; but it was made in the factory in Europe, and we still preserve a specimen of the substance. Naturally, this spurious sulphate was not any more soluble than the alkaloid itself. Next, the pure crystallized sulphate of hyoscyamine actually made its appearance on the market in form of minute golden-glistening crystals, but the price of this was double that of the "white," semi-crystalline (?) sulphate. This yellowish, shining sulphate acted very promptly in doses of one-sixtieth to one-twentieth grain, the larger quantity being, of course, only given in special cases. Its excessive price, however, prevented its extensive use. About the same time, an "amorphous sulphate of hyoscyamine," in form of a yellowish, or buff-colored, dry, but hygroscopic powder, was put on the market. On trial, this was found almost, if not quite, as active and uniformly reliable as the pure crystals, and, from that time on, this amorphous sulphate has been in constant and increased demand in the hospitals, particularly in the lunatic asylums, where it is much relied on as a nervine sedative. This amorphous sulphate of hyoscyamine, however, is made by merely evaporating the mother-water from which the hyoscyamine has been separated to dryness (after addition of sulphuric acid to convert the alkaloid into sulphate). It therefore contains: 1st, the new alkaloid hyoscine discovered by Ladenburg; 2d, the remaining traces of hyoscyamine; 3d, possibly some other alkaloidal body not yet studied. At all events, hyoscine constitutes its main portion. The sulphate of hyoscine, even when pure, does not crystallize. There are, however, several well-crystallizable salts, *f. i.*, the hydriodate and hydrobromate.

It has been found that, of all solanaceous alkaloids, hyoscine is closest allied, therapeutically, to atropine, and even surpassed the latter in its power of producing mydriasis, according to the observations of Hirschberg (see *Centralbl. f. prakt. Augenheilk.*, 1881, June).

Ever since the "amorphous sulphate of hyoscyamine—which is the trade-name for the sulphate of hyoscine above-described—has been used in the public hospitals of New York, it has given complete satisfaction, and is altogether preferred to the pure hyoscyamine.

No. 1,269.—**Liquid for Etching Glass.**

As a further answer to Query 1,168 in our last October number (compare also last January number, p. 16), we quote the following process communicated by Dr. M. Müller in the *Neueste Erfindungen und Erfahrungen:*

Rub together in a porcelain mortar equal parts of (non-fuming) hydrofluoric acid, fluoride of ammonium, and dry sulphate of barium. The latter should have been precipitated from a solution of chloride of barium by an excess of sulphuric acid, washed well by decantation, filtered, and dried at 120° C. The mixture is then poured into a platinum, lead, or rubber vessel, and gradually mixed with fuming hydrofluoric acid, while being thoroughly stirred with a rod made of one of the just-mentioned substances until the magma is rather soft. This thickish liquid may be used for writing on glass with a steel pen. The etching takes place at once, and leaves very handsome opaque marks. It is advisable not to allow the action to continue over twenty seconds, as the edges of the marks may lose their sharpness. If a less strong acid is used, the edges are less liable to be jagged, but the marks are generally less plain.

The thick liquid must be kept in rubber bottles, or may be kept in glass vessels if the latter are coated inside with wax or paraffin. The barium salt is added to prevent the mass from running. It is apt to settle to the bottom in a dense mass, and must be incorporated by shaking before use. Should this be found difficult, some lead-shot may be dropped into the mixture, and shaken up with it.

It should always be remembered that strong hydrofluoric acid is apt to produce very painful and even dangerous sores upon the skin. Caution should, therefore, be observed in using the mixture. [When shaking the bottle, the hands should be wrapped in a towel, and the shaking should be done in such a direction that none of the liquid can be thrown into the face.]

Dr. Ehrlich, of Görlitz, reports that he has had much experience in etching glass and that on one occasion the etching liquid, instead of producing the usual dull or opaque marks caused the etched places to be perfectly transparent. It was found that opaque etching is effected only by *neutral* fluoride of ammonium.

If hydrofluoric acid is evaporated (in a lead or platinum capsule, or in

an ordinary porcelain capsule lined with sheet-rubber) after having been neutralized with ammonia, the *acid* salt —$NH_4Fl.HFl$, is always obtained, since a portion of the ammonia is lost by evaporation. The neutral salt is only obtained if the contents of the capsule are repeatedly neutralized with ammonia during the evaporation. — *Pharm. Zeit.*, No. 5.

No. 1,270.—**Absorbent Cotton**

F. L. Slocum's method is to boil the best quality of carded cotton batting with a five-per-cent solution of caustic soda or potassa for a half-hour, or until the cotton is entirely saturated and the alkali has saponified all the oily matter naturally present in the interior of the fibre. Wash thoroughly, pressing out the water, and immerse for 15 to 20 minutes in a five-per-cent solution of chlorinated lime. Wash again, first with a little water, and then with very dilute muriatic acid, and lastly with an abundance of pure water. Boil again for 15 or 20 minutes in a five-per-cent solution of caustic soda or potassa, and wash well, first in water, and then in acidulated water, and finally in pure water. Dry rapidly.

No. 1,271.—**Nitrite of Sodium** (W. D.).

This correspondent says that he has tried to prepare this salt by a process mentioned in Dunglison's Medical Dictionary, namely, to heat nitrate of sodium and charcoal to a red heat, until the salt becomes white, and then to raise the heat so as to melt the salt. He could not, however, obtain the salt white, not even with the blow-pipe, and as to melting it, this was out of the question altogether. He can only get it to a light gray color. He wants to know what is at fault, and how to test the product.

Theoretically, the amount of charcoal needed for reducing 100 parts of nitrate of sodium to nitrite, is almost exactly 7 parts: $2NaNO_3 + C = 2NaNO_2 + CO_2$. But the reaction is seldom as perfect as the theory would show; and it is always best to use a considerable excess of charcoal. Moreover, the charcoal should be free from mineral constituents. Instead of taking charcoal, metallic lead or copper, in small fragments (fine copper wire) may be taken, with better chance of a good result. The fused mass finally obtained, particularly in the case when charcoal was used, must be dissolved in water, filtered, and evaporated. As a rule, there is always some nitrate left undecomposed, some caustic or carbonated soda is also sometimes produced. The nitrite may be freed from nearly all of these by dissolving it out with 80% alcohol. If it is wanted absolutely pure, the best plan is to *digest*, in a flask, any desired quantity of nitrite of amyl with enough of an alcoholic solution of pure caustic soda, so as not to decompose the whole of the nitrite of amyl. There will finally be present: nitrite of sodium, amylic alcohol, undecomposed nitrite of amyl, and the alcohol. Water is now added, and the mixture heated on the water-bath until all the volatile products are dissipated, when the aqueous solution may be evaporated to dryness. An additional means of purifying would be to precipitate the aqueous solution of nitrite of sodium with nitrate of silver, which yields nitrite of silver; this may be washed, and thereby obtained perfectly pure. The purity of any given sample of nitrite of sodium may be estimated volumetically by titrating with a solution of permanganate of potassium of known strength, acidulated with sulphuric acid (see, however, on this our last number, p. 53). It may also be done, in some cases, gravimetrically by precipitating the alkaline nitrate in hydro-alcoholic solution with nitrate of silver, and weighing the resulting nitrite of silver. For other methods see text-books.

No. 1,272.—**Phosphorus Paste for Rats** (F. F. K.).

Hager recommends the following, which yields a product that may be kept, without spoiling, for months, is easily prepared, very eagerly eaten by rats, and is not liable to produce fire.

The compound is prepared from a powdered sweetened bread, and a syrup of phosphorus.

*a.* The sweetened bread is baked like any other home-made bread, from 1,000 parts of rye flour and 200 parts of powdered sugar. It is then cut in slices, dried, and reduced to a coarse powder, which is kept in tin boxes.

*b.* The syrup of phosphorus is prepared by putting into a flint-glass bottle of a capacity about one-third larger than the volume of the contents, 200 parts of simple syrup and 50 parts of phosphorus. (In place of the 200 parts of syrup, a mixture of 100 parts, each, of syrup and glycerin may be taken.) The bottle is placed in a water-bath, until the phosphorus is melted. It is then corked, wrapped in a cloth, and continuously shaken until the syrup is cold, when the phosphorus will be finely divided. It is kept in a safe place, alongside the phosphorus. Before use it must be well shaken.

The rat poison is made by mixing about 15 parts of the sweetened bread, 10 parts of the syrup of phosphorus, and 20 parts of water together, so as to form a thick paste.

This is spread in pieces of the size of a hazelnut upon fresh bread or pieces of bacon, and placed in the way of the rats.

No. 1,273.—**Cement for Tablets** (C. M., Whitestone, N. Y.).

The adhesive cement now commonly used to fasten the edges of the leaves forming tablets of writing paper, is composed of gum chicle or Balata gum, dissolved in bisulphide of carbon. We cannot give the exact proportions and we have an impression that the use of this compound for such specific purpose is patented.

No. 1,274.—**Purgative Principle of Croton Oil** (J. F. R.).

You will find an answer to your query elsewhere in this number, under the title: "The Purgative and the Vesicating Principle of Croton Oil."

No. 1,275.—**Pharmaceutical Registration in New York and Pennsylvania** (H. C. N., Canada).

Excepting New York City, and Brooklyn, N. Y., no registration is at present required of those wishing to do business as pharmacists in either of the States mentioned.

**Elder Berries.**—If the gentleman asking for information as to the best region for collecting elder berries will address Mr. W. A. Hardy, of Lebanon, Ohio, he may find it to his advantage.

### Liquor Carbonis Detergens.

(Supplement to Query 1,251.)

Our attention has been drawn to a formula published in the *Druggists Circular* for 1870, where it is stated that its composition is said to be as follows:

Quillaia bark, bruised . . 4 lbs.
Alcohol, 65% . . . . . 2 gals.

Heat to boiling and macerate for some days in a sand-bath. (The tincture is then used to saponify the coal tar.)

Coal tar . . . . . 32 oz.
Tincture of Quillaia . . . . . 76 oz.

Digest eight days in a water-bath or sand-bath, at a moderate temperature, occasionally stirring, and filter.

The above is identical with, or at least closely related to, Lebeuf's Coal-tar saponine, which is made thus:

Tincture of Quillaia . . 24 parts.
Coal tar . . . . . 10 "

The tincture is made by heating 100 parts of quillaia bark with 500 parts of 90% alcohol, and filtering.

### Information Wanted.

*a.* How may "Indelible Impression Paper," for marking linen, etc., with nitrate of silver, be prepared?

*b.* What is the composition of
1. Tufft's Asthmaline?
2. Kennedy's Medical Discovery?
2. Swift's Syphilitic Specific?

## NEW PATENTS.

[*Complete specifications and illustrations may be obtained of any one or more of the following patents by sending the number, title, name of patentee, with twenty-five cents for each copy, to the Commissioner of Patents, at Washington, D. C., together with the name and address of the person requesting the same.*]

292,565. *Apparatus for Bottling and Syruping Aerated Beverages.*—James McEwan and Simeon Spencer, Manchester, County of Lancaster, England.

292,629. *Combined Can-Holder and Funnel.*—W. Mark Doty, Bigg's Station, Cal.

292,699. *Process of Solidifying Liquid or Semi-Liquid Fatty Acids.*—William Fitz Charles McCarty, Aix la-Chapelle, Germany.

292,696. *Apparatus for the Manufacture of Carbon Black.*—George G. Shoemaker, Edenburg, Pa.

292,764. *Balanced Thermometer.*—Philip G. Russell, Washington, D. C.

292,821. *Egg-Beater.*—Willis Johnson, Cincinnati, Ohio, assignor of one-half to Jacob Shaw, same place.

293,014. *Siphon Bottle.*—Herman L. Hanson, Medford, and Frederick J. Johnston, Boston, Mass.

293,089. *Bottle Register.*—Ebenezer H. Rogers, Jr., New York, N. Y.

293,117. *Manufacture and Proportioning of Weights and Measures.*—Charles A. L. Totten, U. S. Army.

293,230. *Truss.*—Orlando G. Darling and Henry A. Schultz, Brooklyn, N. Y.

293,335. *Vacuum Press Percolator.*—Charles Richard Knapp, San Francisco, Cal.

293,344. *Process of Extracting Glycerin from Fatty Matters.*—Edmond François Michand and Ernest Nicolas Michand, Aubervilliers, France, assignors, by mesne assignments, to the Continental Glycerin Company, New York, N. Y.

293,460. *Bottle.*—Frederick E. Henig and Frederick Stitzel, Louisville, Ky., assignors to Thomas H. Sherley, same place.

294,047. *Inhaler for Anæsthetics.*—George H. Hurd, Cleveland, Ohio.

294,052. *Lactometer.* — Albert R. Leeds, Hoboken, N. J.

294,181. *Measuring Tank.*—Willard E. Barcus, Vineland, N. J.

294,298. *Medical Compound.*—George Taylor, Reading, Cal., consists of pulverized buckeye-nuts, cayenne pepper, and ground ginger.

294,321. *Truss.*—Elbridge How, Peterborough, N. H.

294,425. *Manufacture of Linseed Oil.*—Albert J. Adams, Cleveland, Ohio.

294,479. *Apparatus for Administering Anæsthetic Gases.*—Amos M. Long, Munroe, Mich.

294,585. *Inhaler for Anæsthetics.*—Henry Cook, Leadville, Colo.

294,592. *Manufacture of Cream of Tartar.*—Franz Dietrich, Munich, Germany.

294,687. *Medical Compound.*—George Siebert, Wheeling, W. Va. Consists of pulverized sulphur, pulverized charcoal, refined sugar, lemon-rind, and sulphate of quinine.

294,729. *Clinical Metallic Thermometer.*—Wm. B. Fowle, Newtown, assignor to Robert M. Morse, Jr., Boston, Mass.

## ASSOCIATION AND COLLEGE NOTES.

### College of Pharmacy of the City of New York.

THE fifty-fourth lecture course of the college has just come to a close. The examinations of the junior class were held on March 3d with the result that, of 154 who presented themselves, 75 passed the examination successfully. The remaining 79, who failed, will have another opportunity given them, in September, to pass an examination.

The senior class was examined on March 5th, 6th and 7th in Botany and Materia Medica, Chemistry and in Pharmacy; also in Analytical Chemistry by being required to determine specimens given to them in the Laboratory; besides, in the recognition of specimens, and in practical pharmacy (prescriptions). Of the total number who presented themselves—120 in all—71 passed the examination successfully, while 49 failed. In addition to the 71 who passed the full examination, 3 others passed in special departments.

On March 18th, the annual commencement was held at Chickering Hall before a large and select audience. Owing to the fact that we are compelled to go to press, we can only note here, for the present, the names of the successful candidates who received their diploma as graduates in pharmacy.

Graduates of the fifty-fourth session, March, 1884:

A. Bayer, Jr., G. W. Bechtold, C. F. Behrens, H. A. Benton, C. D. Bowman, H. Buggle, H. L. J. Burmeister, E. W. Clark, A. B. Colburn, C. L. Conwell, F. P. Dalzell, C. O. Douden, F. Essig, T. H. Francke, E. Fougera, Jr., C. L. Gesell, C. B. Grimshaw, J. J. J. Gress, E. F. Hahn, W. D. Halpine, E. Hammann, F. T. Hartmann, H. E. Heebner, T. L. Hepp, Bertha Higgins, W. J. N. Hilbert, E. Holt, C. F. Jappe, L. L. Kemlage, C. Kuehne, J. H. Laubenheimer, M. M. Louoriel, R. J. Lucke, E. H. Merritt, C. N. Meyer, J. F. Miles, E. F. Mitchell, J. J. Mooney, A. Musler, G. A. Mutimer, L. R. Nathan, F. W. Race, H. Rauch, A. Reich, E. A. Reuss, W. C. Rodemann, E. Rosenkranz, H. W. Rouillion, J. B. Russell, L. Ruzicka, J. C. Saile, A. E. Schaeffer, W. F. Seidler, Jr., J. Shears, W. B. Shuptrine, J. F. Sommerhoff, H. D. Spingarn, W. T. Stafford, Miss A. H. Steinwedel, J. H. Terrell, H. E. Thompson, W. Van Eerde, T. A. Walsh, H. Weber, W. F. Weck, O. K. Weinman, A. V. Widman, C. H. Willard, F. Wuersten, F. Yager, A. Zimmerman.

Successfully passed in *Materia Medica and Chemistry:* C. R. Lush, C. E. Penfield.

*In Chemistry:* J. H. Jones.

The three prizes offered by the Alumni Association were presented to the three students passing highest in their class. The recipients were:

1st prize, gold medal: Joseph L. Sommerhoff.

2d prize, silver medal: Albert Zimmermann.

3d prize, bronze medal: Frank P. Dalzell.

The summer course in practical Botany, under the direction of Prof. Jos. Schrenk, will commence on April 9th. Special attention is called to this, as it is the only public course on botany delivered in the city.

The laboratory courses in analytical chemistry and pharmaceutical practice will be open during the months of April, May, and June. Applications should be made as early as possible.

The annual meeting was held on March 20th, when the following officers were elected: *President*, E. McIntyre; *Vice Presidents*, H. J. Menninger, Gust. Ramsperger, Geo. C. Close; *Treasurer*, David Hays; *Secretary*, Charles Froebel; *Trustees* (to serve three years), Chas. Rice, T. J. MacMahan, D. Peraza, P. F. Lehlbach. *Delegates to the American Pharmaceutical Association*, meeting at Milwaukee), G. J. Seabury, Ch. Rice, T. J. MacMahan, H. W. Atwood, T. F. Main.

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At the thirteenth annual meeting on March 13th, 1884, of the Alumni Association of the New York College of Pharmacy, the following officers were elected: *President*, L. M. Royce; *1st Vice-President*, Fred. Hohenthal; *2d Vice-President*, T. Starr; *3d Vice-President*, H. A. Benton; *Treasurer*, D. Peraza; *Secretary*, Chas. F. Heebner; *Registrar*, John Oehler; *Members of the Executive Board for three years*, P. W. Bedford, C. F. Booth; *Delegates to the Milwaukee Meeting of the A. P. A.*, P. W. Bedford, T. F. Main, H. C. Schranck, J. R. Bond, E. T. F. Hottlensen.

### St. Louis College of Pharmacy.

THE eighteenth annual commencement exercises of the St. Louis College of Pharmacy were held at Memorial Hall, on Wednesday evening March 12th, 1884. The President of the College, H. E. Hoelke, delivered an appropriate address, and conferred the degree of Graduate of Pharmacy on the following candidates:

Henry H. Barth, James M. Borton, Oscar F. C. Bausch, Geo. G. Berg, Chas. H. Biermann, Chas. F. Blank, Wm. T. Carr, Fred. D'Amour, Adolph G. Enderlee, Peter T. Entrekin, Wm. H. Fogas, Emil W. Gordon, Louis C. Haagen, Henry J. Helwig, Adolph J. Hoenny, Wm. O. Kempinsky, Otto Kollme, Chas. C. May, Julius C. Meisenbach, Chas. E. Meyer, Chas. Mueller, Henry Muetze, Wm. E. O'Melveny, Geo. L. Phelps, Louis Francis Reber, Edgar N. Sanders, Ernest C. Scholer, Herman C. Schuh, Fred. Wm. Schumacher, Arnold Sellner, Robt. H. Smiley, Otis W. Smith, Wm. O. Steinmeyer, Chas. H. Stoll, Otto Sutter, Joseph A. Temm, Otto Ude, Fred. Volz, August Vogt, Geo. H. Wagner, Jno. W. Westman, Francis Zerr.

Honorary mention was made of Adolph G. Enderle, Chas. F. Blank, Henry Muetze, Francis Zerr, Wm. O. Kempinsky, Henry H. Barth, Adolph J. Hoenny, Robt. H. Smiley.

The Alumni Prize, a gold medal, was awarded by Francis Hemm on F. W. Schumacher, of Waco, Texas, for obtaining the highest proficiency in all branches.

The valedictory address on behalf of the class was delivered by James M. Borton, of Marion, Illinois. A very interesting and instructive address on the part of the College was delivered by Rev. S. H. Sonneschein.

With the distribution of many beautiful floral offerings and with enlivening music the exercises closed.

The College had an enrolment of 120 students during the past season.

### Alumni Association Louisville College of Pharmacy.

THE tenth regular annual meeting took place at College Hall, March 11th, at 8 P.M.

The meeting was a well-attended one, and proved highly entertaining to all the members present. The following officers were elected to serve for the ensuing year: William Tafel, *President;* B. Buckle, M.D., *first Vice-President;* O. A. Beckmann, *second Vice-President;* P. Schlosser, *Rec. Sec.;* Phil. Fischer, *Treas.;* E. Goebel, *Cor. Sec. Executive Board:* E. Scheffer, Jr., A. Schœttlin, A. J. Elwang, Simon Flexner, Otto E. Mueller.

### Alumni Association of the St. Louis College of Pharmacy.

AT the ninth annual meeting of the Alumni Association, at the College rooms, February 19th, 1884, the following gentlemen were elected for the ensuing year:

Wm. C. Balm, *President;* Louis Schurk and Theo. Klipstine, *Vice-Presidents;* H. F. Hassebrock, *Rec. Sec.;* Wm. Schweickhardt, *Cor. Sec.;* Julius E. Koch, *Register;* J. W. Tomfohrde and Thos. A. Buckland, Jr., for three-year term of Executive Board.

### Virginia State Pharmaceutical Association.

THE Committee on Exhibits for the meeting to be held at Lynchburg, on the 20th, 21st, and 22d of May, have addressed a circular to the drug-trade, soliciting exhibition of such articles as will be of interest to those in attendance. Preparations which are patented, or the formulas for which are withheld, are not eligible for admission. Application for space should be made previous to the first of May, to the Chairman, C. H. Lumsden, Lynchburg, Va.

**The Newark Pharmaceutical Association** has elected for *President*, J. A. Sayre; *Vice-President*, A. M. Linnett; *Secretary*, William Townly; *Treasurer*, W. F. Bell; and member of State Executive Committee, D. W. Brant.

**Missouri.**—The St. Louis Apothecaries' Association organized to promote trade interests has lately appointed a joint committee consisting of C. F. G. Meyer and J. C. Richardson, representing the wholesale trade, and M. W. Alexander, A. Mastbrook, and C. H. C. Klie, from the retailers.

The St. Louis College of Pharmacy Alumni Association's new officers are: *President*, W. C. Bohn; *Vice-Presidents*, L. Schurck, T. Klipstein; *Rec. Secretary*, H. F. Hassebrock; *Corr. Secretary*, W. Schweichardt; *Registrar*, J. E. Koch; *Executive Committee.* J. W. Tomfohrde, T. A. Buckland, Jr.

[See Adv. columns for additional Notes.]

## ITEMS.

### New Pharmacy Regulations in France.

The French Commission for regulating the practice of pharmacy have announced the following:

1. The second class of apothecaries is abolished.

2. No apothecary shall be the proprietor of more than one drug-store, except in the case of branch stores which shall each be in charge of an examined apothecary, whose name appears on the sign and labels.

3. Practising physicians may not dispense medicines except in emergency, and when there is no drug-store within 6 kilometres (more than 3 miles).

4. Unexamined persons cannot become proprietors of drug-stores, even when they employ a qualified manager. An exception, according to circumstances, occurs in the case of widows and of heirs.

5. Stock companies owning drug-stores may employ qualified managers, but each member of the firm must be either an approved pharmacist or a physician not engaged in practice.

6. The sale of secret medicines is prohibited.

7. All nostrums must be labelled with the composition and dose.

8. Nostrums containing poisonous ingredients must be registered the same as other poisons, and the register must be signed by the purchaser.

9. The next Codex will be revised by a commission composed of an equal proportion of medical professors, professors in pharmaceutical schools, and practical apothecaries, and of at least two veterinarians.

**Bethulial Keith, M.D.,** well known as a manufacturing pharmacist, died on the 13th of March, at the age of seventy-three years. He was born in Randolph, Vt., and for some years practised medicine in Dover, N. H. In 1852 he removed to New York and entered the drug trade. Several years since he suffered an attack of cerebral hemorrhage, and relinquished his business to the care of his sons, and he has since passed the most of his time in Connecticut or in Florida. It was during a residence at Jacksonville, Fla., that his death occurred.

**Edward H. Marsh,** of the firm Lazell, Marsh & Gardiner, wholesale druggists, of No. 10 Gold st., died at his home, No. 319 Adelphi st., Brooklyn, on Sunday, March 23d. He was in his usual health on Saturday, attended to his business, and went to the Water Color Exhibition in the evening. About 7 A.M., he complained to his wife of a sharp pain in the region of his heart, and in twenty minutes he was dead. He was about fifty-four years of age, and for twenty-nine years he had been in the wholesale drug business in this city. He was well known in social and charitable circles in Brooklyn, and leaves a widow, three sons, and one daughter.

**Henry A. Tilden,** of New Lebanon, N. Y., died recently (in March), after a somewhat prolonged illness. He was well known as a manufacturer of pharmaceuticals, especially in the line of indigenous drugs, the excellence of his fluid extracts being widely known. He was a brother of ex-Governor Tilden, of New York City.

**Dr. George Engelmann,** the oldest practitioner in St. Louis, and the father of Dr. George J. Engelmann, died of pneumonia on February 4th, in the seventy-sixth year of his age. He was born in Frankfort-on-the-Maine in 1809, and came to the United States in 1832, after having received his education at the Berlin, Heidelberg, and Wurzburg Universities. He was one of the founders of the Western Academy of Science in 1836, and, later, one of the originators of the St. Louis Medical Society. In 1856 he was largely instrumental in founding the St. Louis Academy of Science, and was for many years president of that body. He had a high reputation as an authority in botany, and for forty-seven years he made it a part of his occupation to take meteorological observations several times a day, and only discontinued this practice two days before his death.

**Dr. John Hutton Balfour,** Emeritus Professor of Medicine and Botany in the University of Edinburgh, Regius Keeper of the Royal Botanic Garden, and Queen's Botanist for Scotland, is dead at the same age, seventy-six. He was a member of many learned societies, both at home and abroad, and was the author of a variety of books and articles on botany, including the Manual of Botany, and Botany and Religion.

**Dr. Alfred L. Carroll,** of West New Brighton, Staten Island, succeeds to the late Dr. Elisha Harris, deceased, as Secretary of the N. Y. State Board of Health.

**Dr. Alexander Wood,** of Edinburgh, who is known as the chief promotor, if not the inventor of hypodermic medication by means of the syringe, is dead.

**Powers and Weightman** suffered the destruction of a great part of their chemical laboratory by fire, on the 29th of February. The loss, without regard to insurance, was about a million and a half of dollars. The firm succeeded in saving a large supply of manufactured goods and are supplying orders as fast as possible. Meanwhile the erection of new laboratories has already commenced and the resumption of work will be as speedy as possible. Owing to the occurrence of the fire the price of quinine rose from $1.35 to $1.85 in one day.

**The Quinologist** is no longer to be counted among our journals; its editor, Dr. Mattison, finds his time too much occupied by other affairs. It has done good work in its special field and its demise is to be regretted.

**Castor Oil and School Discipline.**—According to the *British Medical Journal*, castor oil is employed as a means of punishment in the West Highland School, of Lochgoil Head, Scotland. Breaches of school discipline are treated by doses of castor oil, administered, not in the usually prescribed quantity, but by a draught from the bottle. Whatever laxity exists in that school is certainly not on the part of the teacher.—*N. Y. Med. Jour.*

**Duty on Citrate of Magnesia.**—The United States Customs Department has decided that effervescent citrate of magnesia shall pay 25 per cent ad valorem duty, regarding it as coming under the provision for "alkalies and all combinations of any of the foregoing, and all chemical compounds and salts." The department has also decided that enfleurage pomades, which have hitherto been assessed at 50 per cent ad valorem, should be charged at 20 per cent ad valorem, as "manufactured articles not enumerated."

**Soda in Wyoming Territory.**—Mr. F. H. Frankenberg, of Pueblo, Colorado, is about to utilize the raw soda found in the alkaline lakes of Wyoming Territory, by purifying it, and converting it, at Pueblo, into caustic soda, concentrated lye, baking soda, etc.

**Tartaline** is the name of a substitute for cream of tartar which, according to the *Pharm. Journ. and Transactions*, is being sold by English grocers. It is said to consist of the acid sulphate of potash.

**Croton Blisters** are recommended by Guérin as preferable to cantharides blisters, on account of the absence of liability to cause strangury. To make them, agitate equal parts of croton oil and 90% alcohol. After the undissolved portion has subsided, decant the alcoholic solution and evaporate it in a water-bath to the consistency of a thick oil. A piece of silk impregnated with this oil can be can be attached to the centre of a piece of adhesive plaster, and thus applied. [On the other hand the ulceration which sometimes follows the application of croton oil is far more serious than that resulting from cantharidal preparations.]

**An Uncomplicated Prescription.**

WE lately received from a correspondent a request to prepare the fol lowing:

℞ "Root of all Evil" (inclosed).....q.s. ad yrs. j.
Subscription for AMERICAN DRUGGIST.
Sig. G. F. H——.
Charleroix, Charleroix Co., Mich.

The compound has been regularly administered since the receipt of the above formula, and its effects are believed to have been, thus far, very satisfactory. We have excellent facilities for compounding prescriptions of a similar nature from the best materials to be found in the market, and are pleased to solicit the patronage of those whose case requires the like treatment.

"WHAT is a pharmaceutical association?" asked a little damsel who had carefully spelled out the long name in the paper, and the old gentleman, aroused from a perusal of the stock list, answered: "Farmer'cuticle association? Some of those fellows that go around skinning the farmers, I suppose."

THE destruction by fire of the Philadelphia quinine factory is not only a bitter loss to the owner, but will cause people all over the country to have the cold chills.

**To Thin Shoe Blacking** use vinegar or sour beer, and shake well.

## PHARMACEUTICAL CALENDAR.—APRIL.

*Additions to and Corrections of the following Calendar are solicited.*

| Date. | Society Meetings. | Date. | Society Meetings. |
|---|---|---|---|
| Tues. 1st. | Davenport (Iowa) Pharm. Assoc.—Annual M. | Wed. 9th. | Cincinnati (Ohio) Coll. of Pharm. |
| | Maryland Coll. of Pharm.—Meet. | | New York Board of Pharm. |
| | Chicago Coll. Pharm.—Annual Meet. | Thurs. 10th. | Newark (N. J.) Pharm. Assoc. |
| | St. Joseph (Mo.) Pharm. Assoc. | | California Pharm. Soc. and Coll. Pharm.—Quarterly Meet. |
| | Kings Co. (N. Y.) Pharm. Soc.—Brooklyn. | | Philadelphia (Pa.) Coll. of Pharm.—Alum. M. |
| Wed. 2d. | Rhode Island Pharm. Assoc.—Quarterly M. | | Maryland Coll. Pharm.—Baltimore. |
| | Indianapolis (Ind.) Assoc. of Pharmacists. | | N. Y. German Apoth. Soc. |
| Thurs. 3d. | Louisville (Ky.) Coll. of Pharm. | | Lancaster Co. (Pa.) Pharm. Assoc.—Anl. M. |
| Fri. 4th. | American Chemical Soc.—New York. | Tues. 15th. | St. Louis (Mo.) Coll. Pharm.—Tr. & Alum. M. |
| Mon. 7th. | Erie Co. (N. Y.) Pharm. Assoc.—Buffalo. | | Philadelphia (Pa.) Coll. of Pharm. |
| | Pittsburgh Coll. of Pharm.—Quarterly M. | | St. Joseph (Mo.) Pharm. Assoc. |
| | National Coll. of Pharm.—Anl. M., Wash'n. | Tues. 22d. | Boston (Mass.) Druggists' Assoc. |
| Tues. 8th. | Pittsburgh Coll. of Pharm.—Trust. M. | Thurs. 24th. | Kings Co. (N. Y.) Board of Pharmacy.—B'klyn. |
| | Massachusetts Coll. of Pharm.—Boston. | Mon. 28th. | St. Louis (Mo.) Coll. of Pharm.—Annual M. |
| | National Coll. of Pharm.—Washington. | | |